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ABSTRACT

This study represents the second segment of the 3-year longitudinal study to test the effectiveness of the Listen Look Learn (LLL) Multi-Media Communication Skills System. Data were analyzed for the 1968-69 school year for 159 students who participated in LLL instruction during both their first and second year, 113 second-year students who used a traditional reading program during their first year, and 240 control students who had 2 years of reading instruction in a traditional program. The data were collected by questionnaires completed by teachers and by standardized tests. The subjective evaluation of the teachers showed that 11 of the 12 cooperating teachers enjoyed using LLL, nine of the 12 believed it to be superior to other programs with which they have had experience, and a difference of opinion existed as to the ability level with which LLL was most effective. Analysis of the objective data revealed that the LLL students scored significantly above control students on the Word Meaning, Paragraph Meaning, and Word Study Skills subtests of the Stanford Achievement Test and at a significant level above control students on the Cooperative Primary Tests, Listening. Tables are included. (Author/DH)

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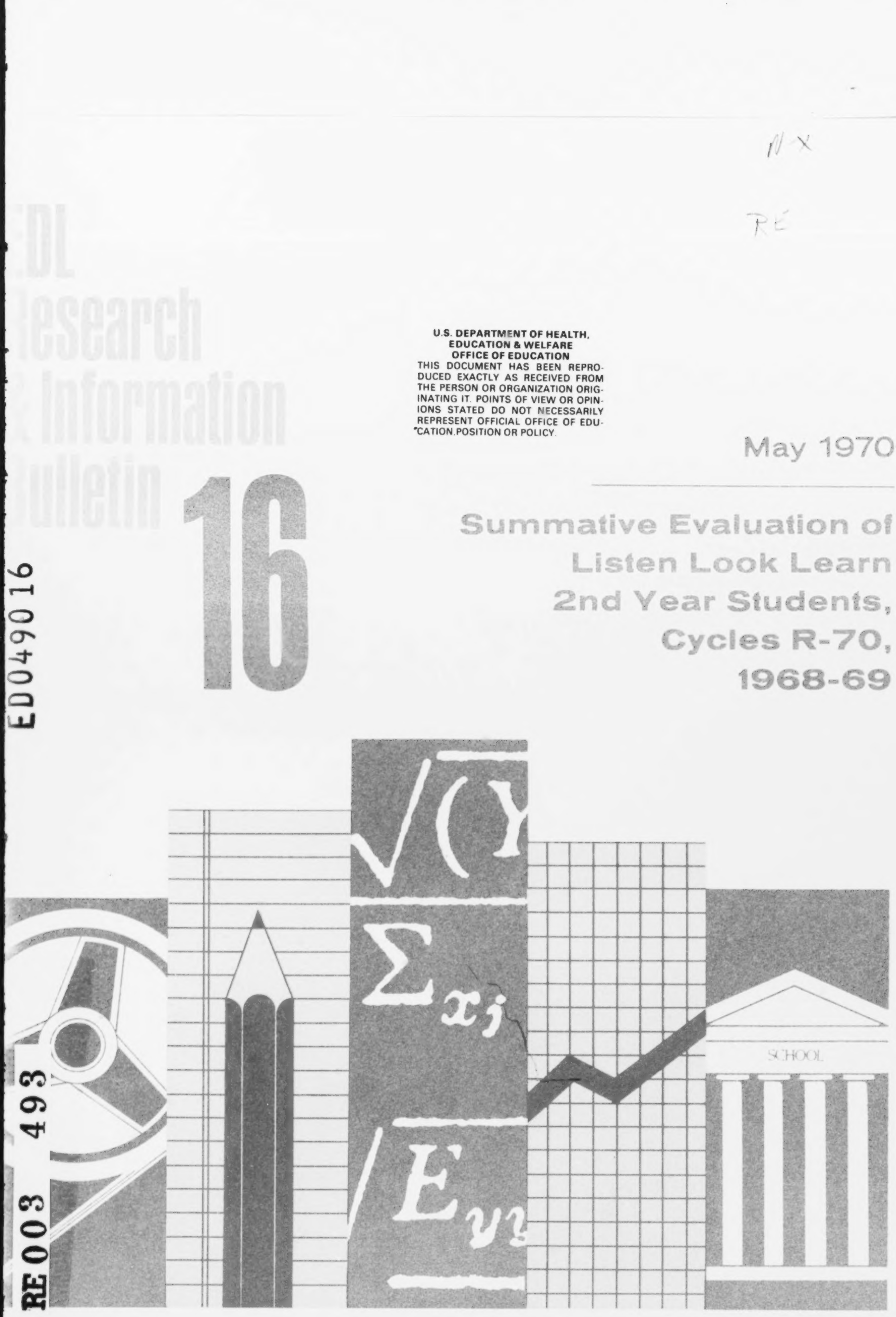

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I

INTRODUCTION

The present study is a report on the use of the *Listen Look Learn* (LLL) Multi-Media Communication Skills System with second-year students during the 1968-1969 school year. This study represents the second segment of the three-year longitudinal study planned by Educational Developmental Laboratories to test the effectiveness of the LLL communication skills system.

Extensive formative research was conducted with the LLL system during the 1965-1967 period. (These results are found in *EDL Research & Information Bulletin No. 10* and are available on request.) The information and data collected during this time provided the basis on which system revision and improvement was made. This revision was considered to be complete by the fall of 1967.

During the 1967-1968 school year, the first year of the longitudinal summative study was undertaken. Fifty-six classrooms throughout the country participated in this study; twenty-eight were LLL classrooms and twenty-eight worked with the text-oriented curricula commonly used in the district (a list of reading programs used by control classes is provided in *EDL Research & Information Bulletin No. 12*).

The primary question of concern in this present study was the relative achievement levels attained by LLL students and by students in traditional text-oriented classrooms (designated control classrooms) during the second year of reading instruction. This question was studied by analyzing both subjective and objective data.

An auxiliary question, which can be answered by test data analyses, is concerned with the relative achievement levels of children who had participated in LLL system instruction during both first and second year, compared to the achievement of children who had transferred into LLL classrooms during their second year after first-year reading instruction in a traditional program.

It can be assumed that no instructional system can be considered to be effective unless the classroom teachers using the system believe it to be manageable and effective with children. For this reason, the responses of classroom teachers regarding use and effectiveness of the LLL system have been collected and are reported in Section III which pertains to the subjective evaluation.

II

METHODS AND PROCEDURES OF THE STUDY

In September, 1968, twelve of the original twenty-eight first-year LLL classrooms continued the use of LLL during their second year of school. These classrooms were located in six states: Arizona, California, Illinois, Minnesota, New York, and Washington. The majority of the students in these classrooms had had LLL instruction during their first year of school. The remaining sixteen LLL installations from the first-year study used the LLL system with new groups of incoming classes of first-year pupils; in these cases, those children who had used LLL during the first-year study were returned to traditional classrooms for their second year's instruction and are not included in this study.

Selection of teachers for the twelve classes using LLL with their second-year students and the selection of control teachers and control classes was the responsibility of the local administrator. To the extent possible, control teachers and control groups were selected to be as similar as possible to LLL experimental teachers and groups in terms of variables such as teacher's training and experience, and student's ability and socio-economic levels. In general, both LLL and control groups were selected from within the same school and, in all cases, comparison groups were selected from within the same school district.

Instructional Treatments Used

The experimental classes in all cases used the *Listen Look Learn* Multi-Media Communication Skills System. Three of the twelve classes had one or more students who began work in Readiness or Pre-Reading Stages. These seven students (three per cent of the sample) were children who were using LLL materials for the first time and whose first-year records indicated poor achievement. Seventy per cent of the sample began the school year working at a level below Cycle 20. Twenty-one per cent began working within the range of Cycle 20 to Cycle 29 and the remaining six per cent began working beyond Cycle 30.

The twelve control classes used the basal materials in use within the district. Six control groups used the Ginn Basic Reading Program; five of these groups used only the Ginn series, one group used the Ginn series in conjunction with three other series. One group used the Harper & Row series, two groups used the Houghton Mifflin series, one group used Sullivan Programmed Reading Materials, and the remaining group had access to a variety of basal series and used them interchangeably with different reading groups.

Methods and Instruments of Evaluation

Questionnaires were mailed by the EDL Research Department to participating teachers at regular intervals during the first and second year of the longitudinal study. In addition to this structured response from participants, the teachers were also supplied with Continuous Feedback Cards on which they could immediately report difficulties, make suggestions, or comment on any segment or component of the program.

Standardized tests, supplied by EDL during both years of the study, were administered by school personnel to all experimental and control classes in order that a comparative analysis might be made. The tests used for the objective evaluation of the 1967-1969 summative study were:

SCHOOL YEAR 1967-1968

Pretests:

Metropolitan Readiness Tests – administered in October 1967[1]

Pintner-Cunningham Primary Test – administered in October 1967[2]

Cooperative Primary Tests, Listening – administered in October 1967[3]

Posttests:

Stanford Achievement Test, Primary I, Reading Tests – administered in May 1968[4]

Cooperative Primary Tests, Listening – administered in May 1968[3]

SCHOOL YEAR 1968-1969

Pretests:

Otis Lennon Mental Ability Test, Elementary I – administered in October 1968[5]

Posttests:

Stanford Achievement Test, Primary II, Reading Tests – administered in May 1969[6]

Cooperative Primary Tests, Listening – administered in May 1969[3]

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[1] *Metropolitan Readiness Tests*, Form A, 1965; available from Harcourt, Brace & World, Inc., New York.

[2] *Pintner-Cunningham Primary Test*, Form B, 1965; available from Harcourt, Brace & World, Inc., New York.

[3] *Cooperative Primary Tests*, Listening, Forms 12A and 12B, 1965; available from Educational Testing Service, Princeton, New Jersey.

[4] *Stanford Achievement Test*, Primary I, Reading Tests, Form W, 1964; available from Harcourt, Brace & World, Inc., New York.

[5] *Otis Lennon Mental Ability Test*, Elementary I, Form J, 1967; available from Harcourt, Brace & World, Inc., New York.

[6] *Stanford Achievement Test*, Primary II, Reading Tests, Form W, 1965; available from Harcourt, Brace & World, Inc., New York.

Methods of Analyzing Data

The present study is primarily concerned with an analysis of results obtained during the 1968-1969 investigation of achievement of second-year students, although selected summaries of data from the study of first-year students were provided to facilitate ancillary comparisons. (*EDL Research & Information Bulletin No. 12* which reports the results of the first year of the summative longitudinal study of LLL is available on request.)

Summaries of subjective data for the present study are provided in Section III. These data were collected through questionnaires distributed to both LLL and control teachers at intervals throughout the school year. Results from the objective analyses are provided in Section IV. Analysis of Variance and Analysis of Covariance with multi-level factorial designs were used for all analyses utilizing the modified BMDO5V Computer Program (1965). The primary analysis involved a 2 x 3 x 2 (treatment by ability level by sex) factorial design. An auxiliary analysis, a 3 x 3 x 2 (treatment by ability level by sex) design, was used to examine differences among students who had participated in LLL classroom activities for two years, students who were in LLL classrooms during the second year only, and students from control groups. Additional analyses were done to test differences due to the factors of socioeconomic background and size of community in which the students lived. Deviation IQ scores were used as covariates where appropriate. Main effects and interactions of main effects were considered. Graphical representations of significant and nonsignificant interactions also are provided in Section IV.

III

RESULTS OF SUBJECTIVE EVALUATION

A subjective evaluation (that part of the evaluation that is concerned with such areas as methods of placing students at the beginning of the second year, specific information regarding teacher procedures during implementation of the LLL system, and teacher opinion of the LLL system) was conducted by questionnaires mailed to participating teachers.

Cycle Placement of LLL Students

The question of placement of students by classroom teachers into the correct cycle of LLL instruction after one year of training was of interest to the system's editor. A questionnaire indicated that cycle placement at the end of the previous school year provided an indication to the classroom teacher of appropriate beginning placement for

second-year students. However, there seemed to be considerable change in some of the children's relative achievement level following the summer vacation. Some children gained appreciably in reading skills, perhaps as a result of summer reading programs, while other children appeared to have forgotten some of the basic fundamentals of reading learned during the first year. For these students, adjustment in cycle placement was required.

Some of the teachers needed to consider proper cycle placement for students who had not been in LLL classrooms during the first year, but were transferred into second-year LLL classrooms. It was reported by these teachers that the skills acquired by these students during the first year could be used to advantage and it was unnecessary for the majority of these transferred students to begin in the Readiness Stages.

For the present study, placement information was requested from LLL teachers for all second-year LLL students. Questionnaire Summary I lists the responses of the twelve participating LLL teachers.

QUESTIONNAIRE SUMMARY I

1. Did the majority of second-year LLL students begin work in the cycle in which they were working at the end of last term?

   Yes 7

   No 5

2. For those second-year students who did not begin at the same cycle, what method of placement was used?

   Two teachers used experimental placement tests suggested by EDL.

   One teacher placed children in lower level cycles than those which students had completed the previous year.

   One teacher informally tested word recognition and reading ability before assigning cycle placement.

   One teacher rapidly reviewed the materials completed the previous year with the class as a group. Small-group and individual cycle placement followed this review.

3. For those children who did not use LLL during their first year, how was cycle placement determined?

   Two teachers used experimental placement tests suggested by EDL.

   Two teachers used Ginn Reading level placement and estimated equivalent cycle placement.

   Two teachers used combinations of student's first-year records, first-year teacher's recommendations, and *Stanford Achievement Test* scores to estimate cycle placement.

   One teacher used the Controlled Reader selections that students were able to read with adequate comprehension as their starting cycle level.

   Two teachers placed students according to a Tach-X vocabulary survey.

   Three teachers established cycle placement by checking a student's ability to read Sampler selections and Word Cards.

Implementation of LLL and Student Progress Through the Cycles

Questionnaire Summary II provides LLL teacher response to items related to elements of LLL not being utilized, progress of students through the cycles, and the time required for cycle completion.

QUESTIONNAIRE SUMMARY II [a]

1. Are you using all elements of the LLL system?

   Yes 10

   No 2

2. If not, which elements are being deleted?

   One teacher deleted motility training.
   One teacher deleted related language arts activities (plays, choral reading, etc.).

3. Are the children who used the LLL system during the first year progressing through the cycles more quickly than they did last year?

   Yes 8

   No 1

   About the same 3

4. Please list the average number of days per cycle the children require at:

Cycles [b]	No. of Days
4-10	6.5 (averaged for 7 teachers)
11-15	6.8 (averaged for 7 teachers)
16-20	6.0 (averaged for 8 teachers)
21-25	5.8 (averaged for 7 teachers)
26-30	4.8 (averaged for 8 teachers)
31-35	4.5 (averaged for 4 teachers)
36-40	4.5 (averaged for 4 teachers)
41 & above	4.3 (averaged for 3 teachers)

[a] Twelve participating teachers.
[b] Teachers responded only for the cycle ranges in which they had children working in January, 1969.

LLL and Control Group Descriptive Variables

Since factors such as class organizational structure and socioeconomic classification of students may have effects upon student achievement, descriptive facts relative to student, classroom, and teacher variables were requested from all participating teachers. Questionnaire Summary III provides these data for both LLL and control classrooms.

QUESTIONNAIRE SUMMARY III

1. Describe type of classroom organization.

LLL	Control
11 selfcontained	9 selfcontained
1 team-teaching	1 pod structure
	1 team-teaching
	1 continuous progress structure

2. List instructional materials or programs used.

LLL	Control [a]
12 LLL	5 Ginn
	1 Ginn, Bank Street, SRA, American Book Co.
	1 Sullivan for 3/4 year and Ginn for 1/4 year
	1 Harper & Row
	2 Houghton Mifflin
	1 Multi-Basal
	1 No Response

3. Was classroom assistance available to you?

LLL		Control [b]	
Yes	6	Yes	8
No	6	No	3

4. What is the total time spent each day for all reading and language arts activities (including all library activities, word games, etc.)?

	LLL	Control [b]
120 minutes or less	3	1
121-150 minutes	2	2
151-180 minutes	6	5
181 minutes or more	1	3

5. Into how many reading groups are your children divided at this time (May 1, 1969)?

	No. of Reading Groups								
	1	2	3	4	5	6	7	8	9
LLL			4	2	3	2	1		
Control [b]			7	2	1				1

6. Computed average number of students who were in attendance during the entire school year.

LLL	Control
25.1 students per class	23.6 students per class

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[a] Ginn Basic Readers, Bank Street Readers, SRA Basic Reading Series, American Book READ Series, Sullivan Programmed Reading Materials, Harper & Row Basic Reading Program, Houghton Mifflin Reading for Meaning.

[b] One teacher did not respond.

7. Describe the socioeconomic category of the children in your classroom.

	LLL[a]				Control[a]			
	High	Average	Low		High	Average	Low	
Group 1	1	25	5			18	11	
Group 2		16	15			23	8	
Group 3	12	5	5		19	1	4	
Group 4		7	24			8	23	
Group 5		18	5			2	23	
Group 6			25			6	18	
Group 7		4	18			3	11	
Group 8		3	24			9	14	
Group 9	1	11	6				21	
Group 10	1	14	9			9	9	
Group 11		8	12			6	15	
Group 12		22	5			18	4	
TOTAL	15	133	153	(301)	19	103	161	(283)
% of Total	5%	44%	51%		7%	36%	57%	

8. Describe the size and type of community in which the installation is located.

	LLL	Control
Urban: 50,000 and above	3	3
Inner City: 50,000 and above	6	6
Suburban: 10,000 – 49,999	2	2
Suburban: 2,500 – 9,999	1	1

[a]Missing data cases are included.

Teacher Opinion of LLL System Management and Student Interest in the LLL Program

At the end of the school year, a questionnaire submitted to cooperating teachers requested teacher opinion concerning management of the total LLL system and student interest in the program. These data, summarized in Questionnaire Summary IV, indicated that in general the LLL system was considered by the teachers to be both effective and manageable. Eleven of the twelve teachers reported that they had enjoyed using the system and only one of the eleven indicated that she felt overwhelmed by the quantity and diversity of the activities provided. Nine of the twelve believed the program to be superior to other programs with which they had had experience, two believed the program to be comparable, and one of the teachers felt that, as a first-year teacher, she could make no comparison. Ten of the twelve participants expressed a desire to use the system the following year and the remaining two stated that their lack of desire to use the system again was due to the planning time required for successful system operation.

Two teachers believed the system to be most effective for low-ability children, four teachers believed it to be most effective with average children, and three believed it to be most effective for use with high-ability children. The remaining three teachers thought

that the system was equally effective for students at all ability levels. Eight teachers reported that the interest level of the students in the use of instruments was initially high and remained high throughout the year, two teachers reported low initial interest and increased interest levels as time progressed, while the remaining two teachers reported high initial interest levels that decreased over time. Seven of the twelve teachers reported no noticeable change in numbers of disciplinary actions required, but three teachers did indicate a decrease in disciplinary actions compared to other years of teaching an equivalent grade level using different programs. Another teacher reported that no disciplinary actions were necessary. The first-year teacher could make no comparison.

Of the 301 students enrolled in LLL classes, only twenty students had their cycle placement changed due to incorrect initial grouping; seventeen were moved ahead, three were moved back.

QUESTIONNAIRE SUMMARY IV

Question	Response
1. Teacher reaction to the program:	
I am comfortable with the program and enjoy using it	10
I am comfortable with the program but do not enjoy using it	1
I feel overwhelmed by the program and do not enjoy using it	0
I feel overwhelmed by the program but still enjoy using it	1
2. Teacher evaluation of the program:	
The program is superior to others I have taught	9
The program is comparable to others I have taught	2
The program is inferior to others I have taught	0
This is my first teaching experience	1
3. Check as many statements as apply:	
Too much time is involved in planning for each day	2
One teacher can easily handle the program	7
Parents would prefer their children in a conventional basal program	1
I would like to use this program again next year	10
4. The LLL program has the greatest appeal for:	
Low-ability pupils	2
Average-ability pupils	4
High-ability pupils	3
All groups about the same	3
5. Pupils' interest level in the use of the instruments:	
Remained high during the school year	8
Started high and diminished as time progressed	2
Started low and increased as time progressed	2
Remained low during the school year	0
6. Check below the amount of disciplinary actions necessary (referrals to the office, conferences with parents):	
Less than in previous years with other instructional programs	3
As much as in previous years with other instructional programs	7
More than in previous years with other instructional programs	0
This is my first teaching experience	1
No disciplinary action necessary	1

7. After initial grouping, the following numbers of students were moved ahead or moved back within the program:

Reason for Change	Number of Pupils	
	Moved Ahead	Moved Back
Increased motivation	30	
Incorrect initial placement	17	3
Decreased motivation		6
Problems outside of school		3

IV

RESULTS OF OBJECTIVE EVALUATION

This section describes the objective evaluation of the study of the second year of LLL system use which was conducted during the 1968-1969 school year. Twelve LLL and twelve control (other basal reading programs) classes constituted the sample.

Descriptive data are provided for the total experimental and control groups. Also provided are mean values of variables classified according to cycle placement at the end of the second year of LLL instruction. Analysis of Variance and Analysis of Covariance were employed with the four multi-level factorial designs under study. The primary design involved an analysis of differences between total experimental and control groups. An auxiliary design was done to analyze the differences among second-year students who worked with the LLL system of instruction for two years, second-year students who worked with the LLL system of instruction for one year, and control students who worked with other basal programs. Another auxiliary analysis was performed to test the effectiveness of the program for differing sizes of communities. The fourth analysis was done to determine the effect socioeconomic status might have on student achievement.

Teachers in the LLL and Control Groups

Both experimental and control teachers were asked to submit information to EDL with respect to their educational background and teaching experience. Table I summarizes this information.

TABLE I

TEACHING EXPERIENCE AND EDUCATIONAL BACKGROUND OF LLL AND CONTROL TEACHERS

	N	Average Years in Teaching [a]	Average Years Teaching Present Grade [a]	Degree [b] B	B+	M	M+	LLL Workshop Yes	No	In-Service Reading Program [c] Yes	No
LLL	12	3.3	2.3	4	5	2	1	7	5	6	6
Control	14*	2.8	2.4	5	7	1	1	0	14	2	8

*One of the twelve control classes had three teachers
[a] 1 = 1 year or less, 2 = 2-4 years, 3 = 5-12 years, 4 = 11-20 years, and 5 = more than 20 years
[b] B = Bachelor's Degree, and M = Master's Degree
[c] Four control teachers did not respond to this question

Teachers in both the experimental and control groups had from two to four years' experience teaching second grade. The LLL teachers had slightly more total teaching experience than the control teachers. Eight experimental and nine control teachers had training beyond the Bachelor's level. Seven of the twelve LLL teachers attended an LLL workshop prior to working with the system. Of the five LLL teachers without workshop training, one had received instruction in the use of the program by both the EDL representative in the area and the first-grade LLL teacher. Six LLL teachers and two control teachers had participated in various types of in-service reading programs.

Description of the Sample

Mean (average) values and standard deviations of sample variables are provided in Table II. Values for both the *Listen Look Learn* and control groups are provided except where data are not available for the control group. For example, cycle placement data are available only for children in the LLL group.

TABLE II

MEAN VALUES OF DESCRIPTIVE VARIABLES FOR EXPERIMENTAL AND CONTROL GROUPS: SECOND-YEAR STUDY 1968-1969

Descriptive Variable	(LLL) Experimental	Control
Number in Sample	272	240
Age in Months (Oct. 1968)		
Mean	89.6	89.5
Standard Deviation	5.5	5.1
IQ (Oct. 1968)		
Mean	98.9	97.3
Standard Deviation	14.7	14.5
Community Size[a]		
Mean	3.6	3.5
Standard Deviation	.7	.7
Community Type[b]		
Mean	2.2	2.2
Standard Deviation	.7	.7
Socioeconomic Status[c]		
Mean	1.5	1.5
Standard Deviation	.6	.6
Number of Weeks in Program		
Mean	38.5	40.1
Standard Deviation	1.8	.7
LLL Minutes per Day		
Mean	139.8	
Standard Deviation	29.7	
Total Minutes per Day (Language Arts)		
Mean	184.4	163.9
Standard Deviation	62.3	36.6
Beginning Cycle (Sept. 1968)		
Mean	13.8	
Standard Deviation	10.3	
Reading Speed (Controlled Reader dial setting Sept. 1968)[d]		
Mean (Words per minute)	137.3	
Standard Deviation	83.3	
Ending Cycle (May 1969)		
Mean	39.0	
Standard Deviation	13.4	
Reading Speed (Controlled Reader dial setting May 1969)[d]		
Mean (Words per minute)	211.5	
Standard Deviation	117.8	
SAT Word Meaning Subtest (May 1969)		
Raw Score Mean	18.4	15.2
Standard Deviation	8.9	7.2
SAT Paragraph Meaning Subtest (May 1969)		
Raw Score Mean	28.9	24.2
Standard Deviation	12.9	12.1
SAT Word Study Skills Subtest (May 1969)		
Raw Score Mean	33.1	32.3
Standard Deviation	11.8	11.1
Cooperative Primary Test, Listening (May 1969)		
Raw Score Mean	38.7	37.7
Standard Deviation	7.3	6.3

[a] 1 = less than 2,500; 2 = 2,500 to 10,000; 3 = 10,000 to 50,000; 4 = 50,000 to 250,000; 5 = 250,000 to 1 million; 6 = more than 1 million
[b] 1 = urban, 2 = inner city (ghetto), 3 = suburban, 4 = urban
[c] 1 = low, 2 = middle, 3 = high
[d] Based on average cycle completed

The average age of students from both groups was similar. Sixty-eight per cent of the experimental group ranged in age from 84.1 months to 95.1 months as compared to a range of 84.4 months to 94.6 months for the control group. The mean age of the experimental group was 89.6 months and 89.5 months for the control group.

A wide range of ability levels was represented in the sample. The ability scores as measured by the *Otis Lennon Mental Ability Test* ranged from a deviation IQ of 53 to 150 for the LLL students and 53 to 142 for students from the control group. The mean ability scores for the experimental and control groups were 98.9 and 97.3 respectively.

Students from various size communities and from both urban and suburban districts were represented in the sample.

Average and low socioeconomic categories were represented in approximately equal numbers but only twenty children from the total sample of students with complete pre- and posttest data (512 students) were identified as high socioeconomic level.

LLL classes worked with the program an average of 38.5 weeks and control classes were in operation an average of 40.1 weeks. Approximately 20 minutes more time per day was devoted to the total language arts program by LLL teachers than by control teachers. In LLL classes, of the 184.4 minutes per day apportioned to language arts, 139.8 minutes per day were set aside for LLL activities. The control group devoted 163.9 minutes per day to language arts activities.

Additional data, which were available on LLL students, were tabulated, and mean values were computed for children at various ranges of cycle completion. These data are provided in Table III.

TABLE III

MEAN VALUES OF VARIABLES FOR LISTEN LOOK LEARN STUDENTS CLASSIFIED ACCORDING TO CYCLE PLACEMENT IN MAY OF SECOND YEAR

Cycle Placement May 1969	Total No. of Students	No. Who Used LLL For Two Years	No. Who Were In Non-LLL Classes As 1st Graders	IQ	No. of Weeks In Program	LLL Minutes Per Day	Total Language Arts Minutes Per Day	Speed of Reading With a Minimum of 70% Comprehension [a]		No. of Cycles Completed During 2nd Year
								Sept. 1968	May 1969	
15-20	22	12	10	87.5	39.0	153.6	216.4	86.0	75.8	15.0
21-25	34	9	25	91.9	39.6	144.7	200.3	90.0	109.7	18.4
26-30	28	17	11	93.9	38.9	152.1	202.5	95.6	169.6	18.6
31-35	29	20	9	93.7	38.4	139.1	202.6	95.2	166.5	22.1
36-40	43	25	18	105.0	37.9	154.2	230.8	117.4	202.1	16.1
41-45	24	10	14	98.9	37.5	137.1	157.1	183.2	248.4	31.6
46-50	32	22	10	95.8	39.2	111.3	145.0	177.6	202.5	32.2
51-55	31	27	4	105.7	38.9	139.4	144.2	215.0	310.5	32.7
56-60	7	1	6	105.9	34.0	140.0	150.0	129.0	322.5	34.0
61-65	22	16	6	115.2	37.2	120.0	139.1	152.7	335.4	37.1
Total or Average Values	272	159	113	98.9	38.5	139.8	184.4	137.3	211.5	25.7

[a] Speed in words per minute computed from Controlled Reader dial settings. Figured on cycle ranges within which children were working.

Of the 272 students with complete data available who were in the LLL group, 159 students, or 58 per cent, had been in the program for two years while 113 students, or 42 per cent, were transferred to LLL classrooms after their first year of reading instruction in a traditional program. An average LLL student had a deviation IQ of 98.9. He had 139.8 minutes of LLL instruction per day and an additional 44.6 minutes per day of supplementary language arts instruction. In September 1968, his reading speed with a minimum of 70 per cent comprehension was 137.3 words per minute. By May 1969, his reading speed had increased to 211.5 words per minute, an increase of 35 per cent. He completed 25.7 cycles during his second year.

It is of interest to examine the achievement of LLL students who were working at various cycles in May of 1968 and May of 1969. This analysis was done for the 1967-1968 data and partial results are given in Table IV. Mean values are given for children who had completed Cycles 10, 20, 30, and 40 by May 1968. Grade level equivalencies are based on grade norms for May (1.8). It can be seen that for the 101 students working at Cycle 20 at the time of testing, the students were at or within one month of grade level. Cycle 20 was below the average cycle level attained for the total LLL sample. For the 685 LLL children in the 1967-1968 study, the average cycle placement was approximately Cycle 23.

TABLE IV

MEAN RAW SCORES AND GRADE EQUIVALENTS FOR FIRST-YEAR CHILDREN WORKING AT CYCLES 10, 20, 30, AND 40 IN MAY 1968

		Stanford Achievement Test[a] — Subtests							
		Word Reading		Paragraph Meaning		Vocabulary		Word Study Skills	
Cycle	Number of Students	Raw Score	Grade Equiv.	Raw Score	Grade Equiv.	Raw Score	Grade Equiv.	Raw Score	Grade Equiv.
10	23	16.9	1.6	14.2	1.6	17.2	1.5	21.1	1.3
20	101	20.9	1.8	20.0	1.7	21.1	1.8	33.2	1.7
30	16	26.7	2.2	22.9	1.8	24.7	2.3	38.6	2.0
40	77	29.3	2.4	30.0	2.3	30.3	3.1	49.0	3.2

[a] Primary I Reading subtests, administered May 1968

Corresponding data for second-year students are provided in Table V. Since the sample of LLL students was smaller in the 1968-1969 study (272 compared to 685), mean values for ranges of cycles completed was used rather than computing values for individual cycles. The averages are based on the total number of cycles completed over the two-year period.

TABLE V

MEAN IQ, RAW SCORES, AND GRADE EQUIVALENTS FOR SECOND-YEAR CHILDREN WORKING AT VARIOUS CYCLE RANGES IN MAY 1969

Cycle Placement May 1969	No. of Students	IQ[b]	Stanford Achievement Test[a] — Subtests					
			Word Meaning		Paragraph Meaning		Word Study Skills	
			Raw Score	Grade Equiv.	Raw Score	Grade Equiv.	Raw Score	Grade Equiv.
15-20	22	87.5	11.5	2.1	15.3	1.9	23.4	1.7
21-25	34	91.9	8.8	1.8	16.2	1.9	23.3	1.7
26-30	28	93.9	13.7	2.5	19.3	2.1	27.0	2.0
31-35	29	93.7	13.6	2.5	21.9	2.3	26.9	2.0
36-40	43	105.0	21.0	3.1	33.8	3.0	35.7	2.8
41-45	24	98.9	20.6	3.1	33.1	3.0	33.9	2.6
46-50	32	95.8	20.3	3.0	32.8	3.0	37.2	2.9
51-55	31	105.7	26.7	3.8	38.7	3.4	39.1	3.1
56-60	7	105.9	24.4	3.5	41.1	3.6	46.3	4.0
61-65	22	115.2	29.1	4.2	45.5	4.2	49.6	5.0

[a] Primary II Reading subtests
[b] Otis Lennon Mental Ability Test

For second-year students who completed cycles in the range of 15-25, the grade equivalents are comparable with the results from the first-year study. It appears, from the results of the two studies, that a child is able to score at a level appropriate for the end of the first year (1.8 and above) after completing approximately 20-25 cycles of LLL instruction. It can further be seen from Table V that children completing approximately 40 cycles of LLL instruction score at or above the grade equivalency appropriate for the end of the second year (2.8).

The range of ability levels (IQ scores) for the different ranges of cycles completed is of interest. For the test administered, the *Otis Lennon Mental Ability Test*, Elementary I, Form J, the deviation IQ mean value is 100 and the standard error of measurement is 6. This means that a hypothetical "average" child's true score would be in the range of 94 to 106 two times out of three on this testing instrument. For the two groups of children completing fewer than 26 cycles of instruction, the mean IQ was below this average range (15-20 cycles: IQ 88; 21-25 cycles: IQ 92). For the group of children completing 61-65 cycles of instruction, the mean IQ was above the average range (approximately 115). The mean IQ of the remaining sample, as measured by this test, was within the average range. Thus, assuming a typical child from the sample under study would have completed approximately 23 cycles during the first year and 25 cycles during the second year for a total of 48 cycles completed, this child would have an IQ of 96, within the average range. His corresponding grade equivalent average on the SAT reading subtests would be 3.0, 3.0, and 2.9 for Word Meaning, Paragraph Meaning, and Word Study Skills respectively, which is two months above the national norm (2.8) for Word Meaning and Paragraph Meaning and one month above for Word Study Skills.

The relationship between cycle placement and grade placement on the standardized tests should also be examined. Approximately 60 per cent of the sample was working at or above Cycle 36 in May 1969. For only one cycle range on one subtest did a subsample score below grade placement on the standardized test (Word Study Skills for

students in the cycle range of 41-45). For the remaining seventeen categories, the grade placement values were at or well above the norm values. Further, it can be seen from Table V that the more than 20 per cent of the sample who were working at or above Cycle 51 scored from 3 months to 2 years and 2 months above grade placement norms.

Results of the Comparison of the Total LLL and Control Groups

The results of the Analysis of Variance for the primary analysis (treatment x ability level x sex) completed after the first year of the study is provided in Table VI. The results of this analysis of first-year LLL use indicated consistent results favoring LLL students over students from text-oriented classrooms, higher levels of ability over lower ability levels, and girls over boys for those subtests where significant differences did exist.

TABLE VI

SUMMARY OF F-RATIOS AND ERROR MEAN SQUARES FOR ANALYSIS OF VARIANCE: PRIMARY ANALYSIS FOR FIRST-YEAR STUDY 1967-1968

Source of Variation	df	Stanford Achievement Test[a] — Subtests: Word Reading	Paragraph Meaning	Vocabulary	Word Study Skills	Cooperative Tests[c]: Listening
Treatment	1	21.16**	20.52**	5.76*	4.29*	18.87**
Ability Level	2	17.77**	18.71**	17.70**	9.63**	22.59**
Sex	1	10.68**	23.51**	1.47	10.67**	5.14*
Treatment x Ability Level	2	8.16**	6.48**	4.19*	4.73*	1.47
Treatment x Sex	1	3.01	1.18	1.07	1.07	.96
Ability Level x Sex	2	1.04	.84	.83	.90	1.03
Treatment x Ability Level x Sex	2	1.82	.97	.96	1.81	.86
Error Mean Square	934[b]	43.46	73.64	36.62	84.30	30.92

[a] Primary I Reading subtests, administered May 1968
[b] df for Word Reading Subtest
[c] Cooperative Primary Listening Test, administered May 1968
* $p < .05$
** $p < .01$

The interaction of treatment by ability level was significant for the four *Stanford Achievement Test* reading subtests but not for the *Cooperative Primary Tests*, Listening. These interactions resulted from relatively greater differences in achievement between LLL and control children within the three ability levels defined (average-ability level: IQ 88-112; high-ability level: IQ 113 and above; or low-ability level: IQ 87 and below). The children in the average range, IQ 88-112, appeared, in terms of achievement levels, to have benefited most from the use of the LLL system.

Analysis of data from the longitudinal study of students using LLL for a second year was done in a similar way. The primary analysis involved a 2 x 3 x 2 (treatment group by ability level by sex) factorial design and Analysis of Variance.

The BMDO5V computer program was used to compute the Analysis of Variance. In order to establish proportionality between cells, cases from disproportionately large cells were dropped from the analysis at random. It is of particular importance to consider the proportionality of cell size and cell variance when numbers of replications within cells are not equal. If cells with greater numbers of replications are also the cells with smaller variance or if relatively small cells have larger variance, the result is a statistical test that is far too liberal. Since numbers of replications within cells were not equal but had been established to be proportional, tests for homogeniety of variance were required. The F Max test was used as a check for homogeniety of variance for the analysis of each subtest. This test was conducted for each analysis after proportionality had been achieved and on no subtest did the data contradict the hypothesis of homogeniety.

Table VII is a summary of the primary analysis for the second-year data. It can be seen from the table that differences due to treatment (LLL or control) were highly significant ($p<.01$)[1] and favored the LLL group for the three *Stanford Achievement Test* reading subtests and significant ($p<.05$)[2] favoring the LLL group for the *Cooperative Primary Tests*, Listening.

TABLE VII

SUMMARY OF F-RATIOS AND ERROR MEAN SQUARES FOR ANALYSIS OF VARIANCE: PRIMARY ANALYSIS FOR SECOND-YEAR STUDY

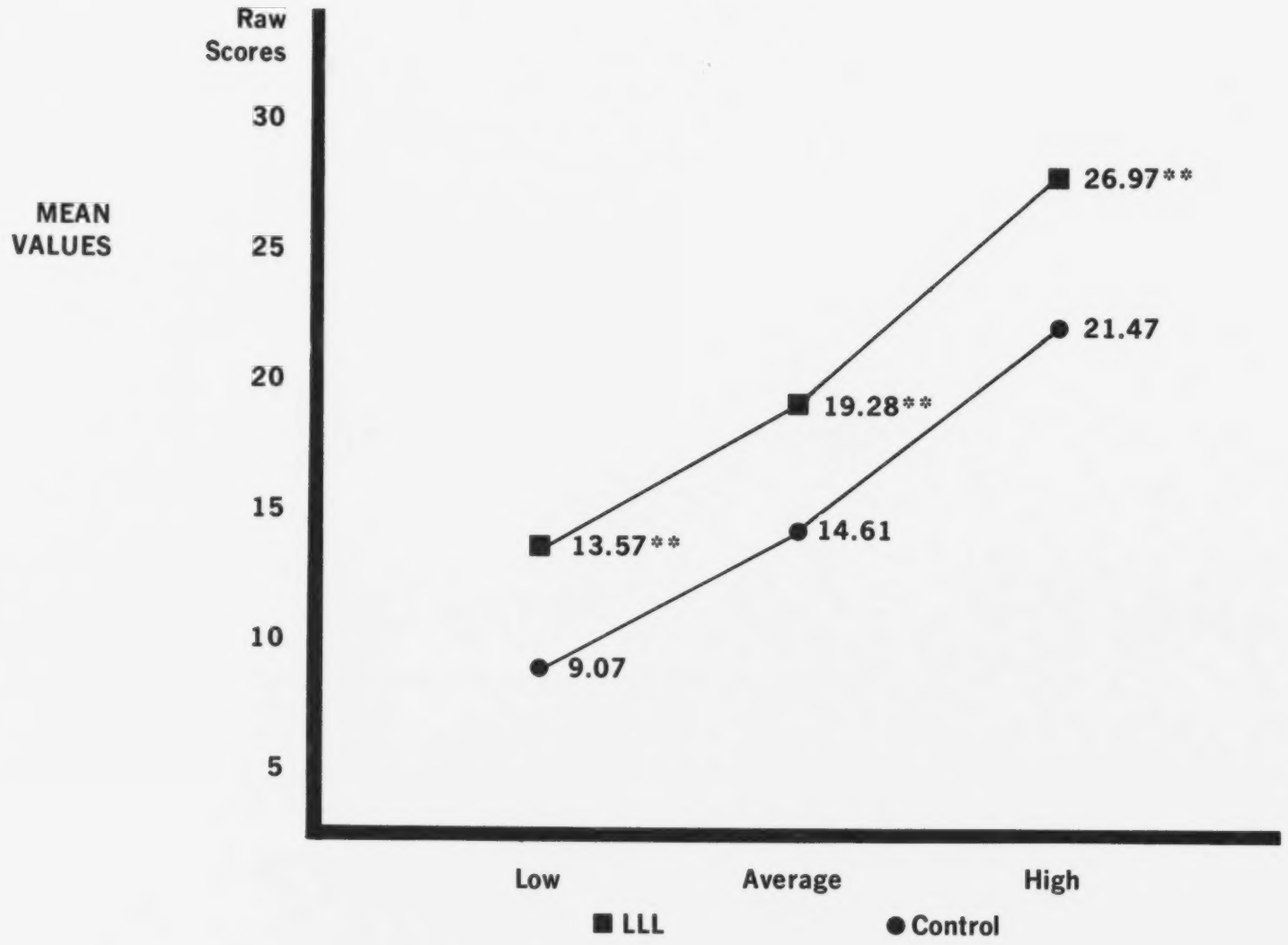
		Stanford Achievement Test[a] — Subtests			Cooperative Tests[b]
Source of Variation	df	Word Meaning	Paragraph Meaning	Word Study Skills	Listening
Treatment	1	39.04**	41.32**	7.97**	6.12*
Ability Level	2	72.21**	97.37**	50.25**	62.82**
Sex	1	2.40	1.52	9.15**	4.18*
Treatment x Ability Level	2	.08	.16	.58	.89
Treatment x Sex	1	.05	1.37	.04	2.91
Ability Level x Sex	2	.03	.64	1.03	.78
Treatment x Ability Level x Sex	2	2.26	2.02	.28	6.89**
Error Mean Square	385	49.41			
	385		102.20		
	342			102.96	
	253				21.99

[a] Primary II Reading subtests, administered May 1969
[b] Cooperative Primary Listening Test, administered May 1969
* $p < .05$
** $p < .01$

[1] $p<.01$ means that the probability of this difference occurring by chance was only one time out of one hundred.

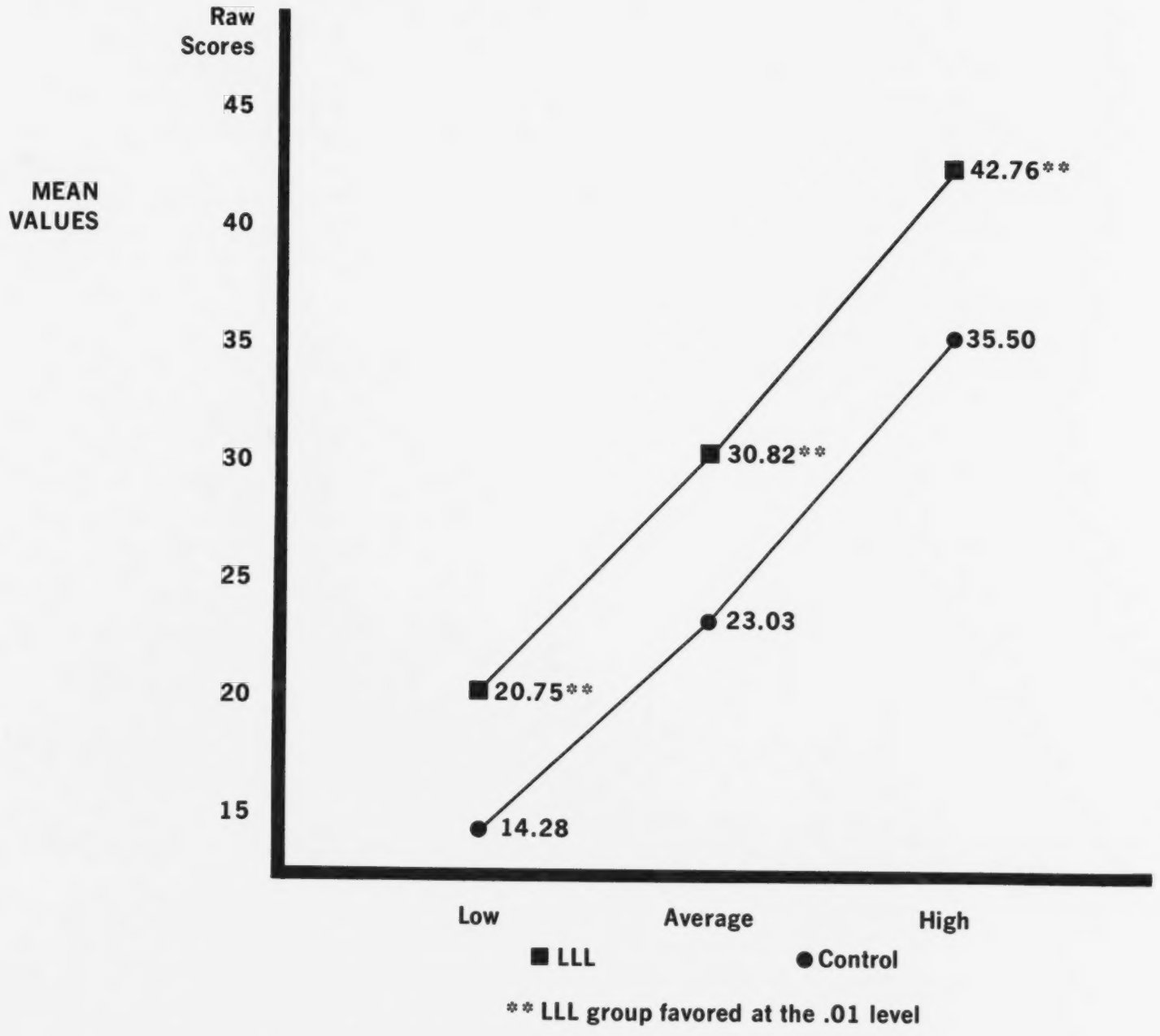
[2] $p<.05$ means that the probability of this difference occurring by chance was only five times out of one hundred.

Table VII also indicates significant ($p<.01$) differences due to ability level. Figures 1-4 indicate that differences favored high-ability students as would be expected. In addition, Table VII shows a highly significant ($p<.01$) difference due to sex for the *Stanford Achievement Test*, Word Study Skills subtest, and a significant ($p<.05$) difference for the *Cooperative Primary Tests*, Listening. From Figure 7, which graphically portrays the results for the Word Study Skills, it can be seen that this difference was in favor of girls; whereas in Figure 8, which graphs the results on Listening, the difference was in favor of boys. No differences due to sex are indicated in Table VII for Word Meaning or Paragraph Meaning.



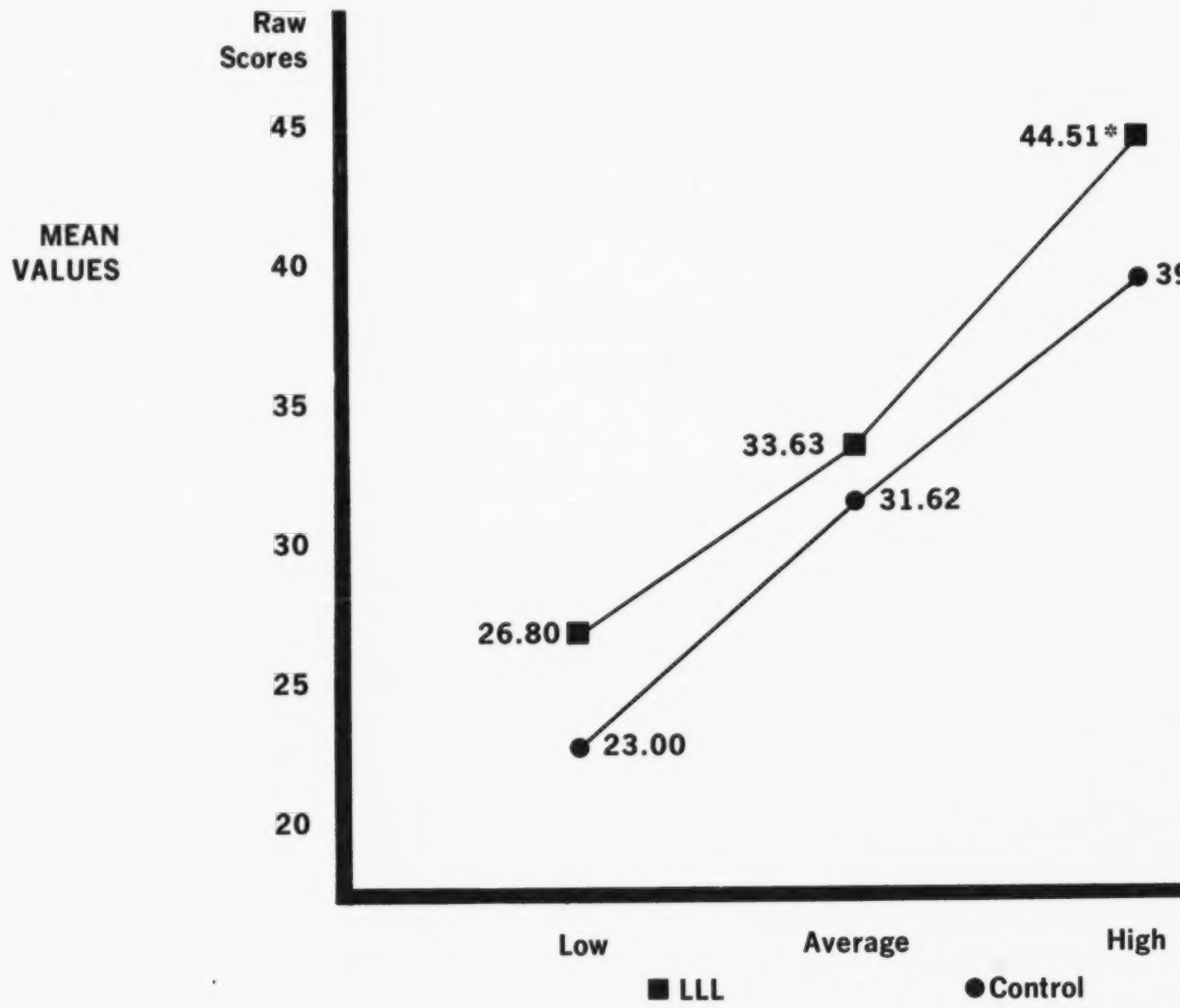
Graphical Representation of Two-Way Interaction of Ability Level by Treatment Group for Word Meaning Subtest of the Stanford Achievement Test, Primary II

Figure 1.



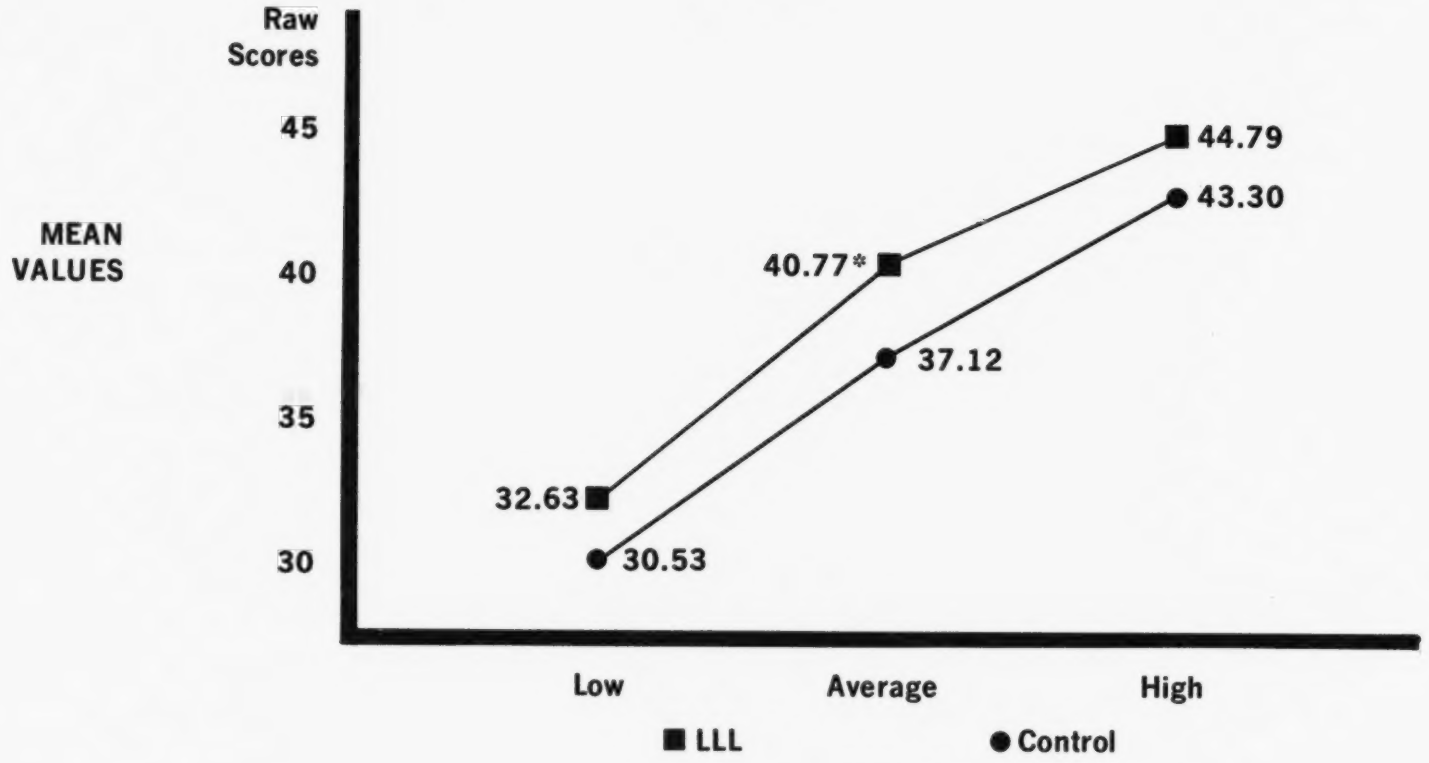
Graphical Representation of Two-Way Interaction of Ability Level by Treatment Group for Paragraph Meaning Subtest of the Stanford Achievement Test, Primary II

Figure 2.



Graphical Representation of Two-Way Interaction of Ability Level by Treatment Group for Word Study Skills Subtest of the Stanford Achievement Test, Primary II

Figure 3.



* LLL group favored at the .05 level

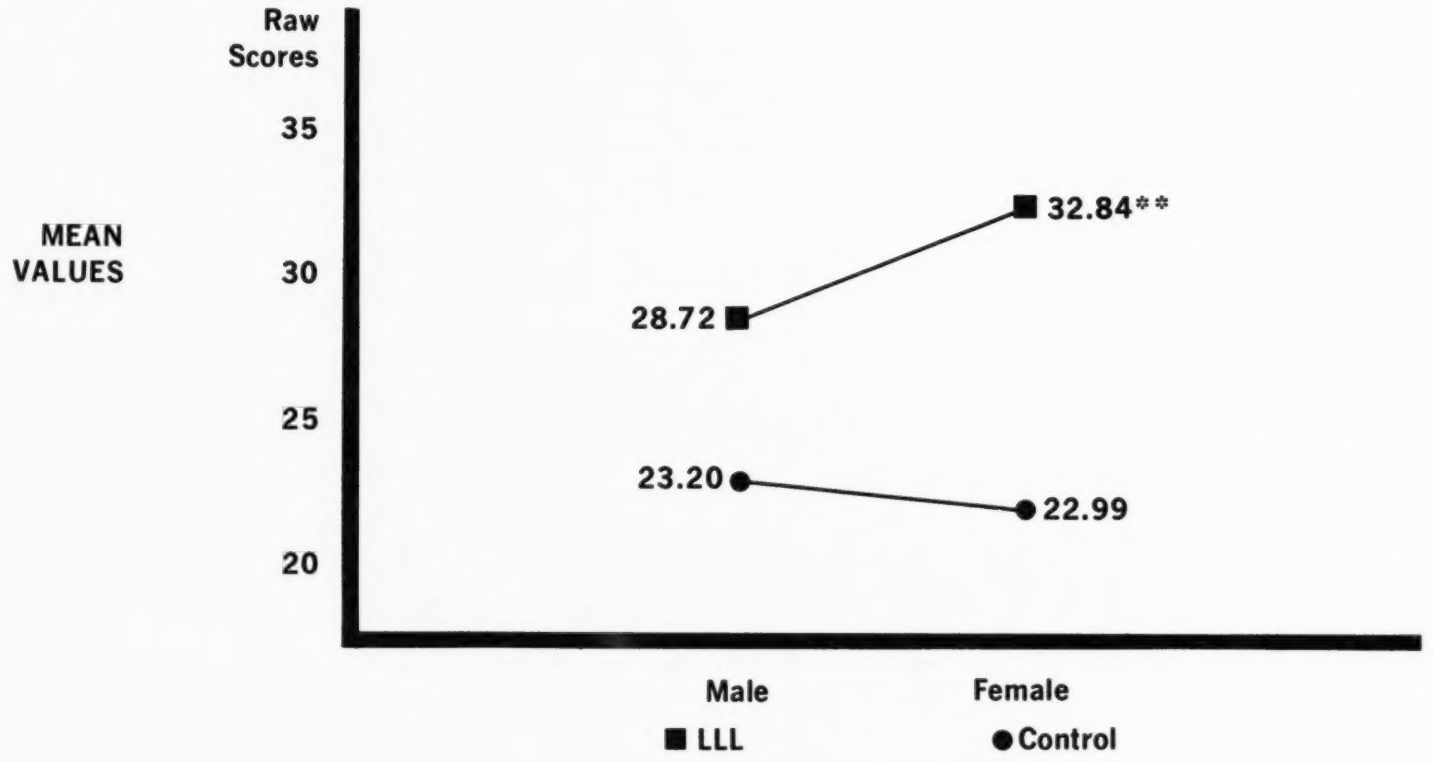
Graphical Representation of Two-Way Interaction of Ability Level by Treatment Group for Cooperative Primary Listening Test

Figure 4.

** LLL group favored at the .01 level

Graphical Representation of Two-Way Interaction of Sex by Treatment Group for Word Meaning Subtest of the Stanford Achievement Test, Primary II

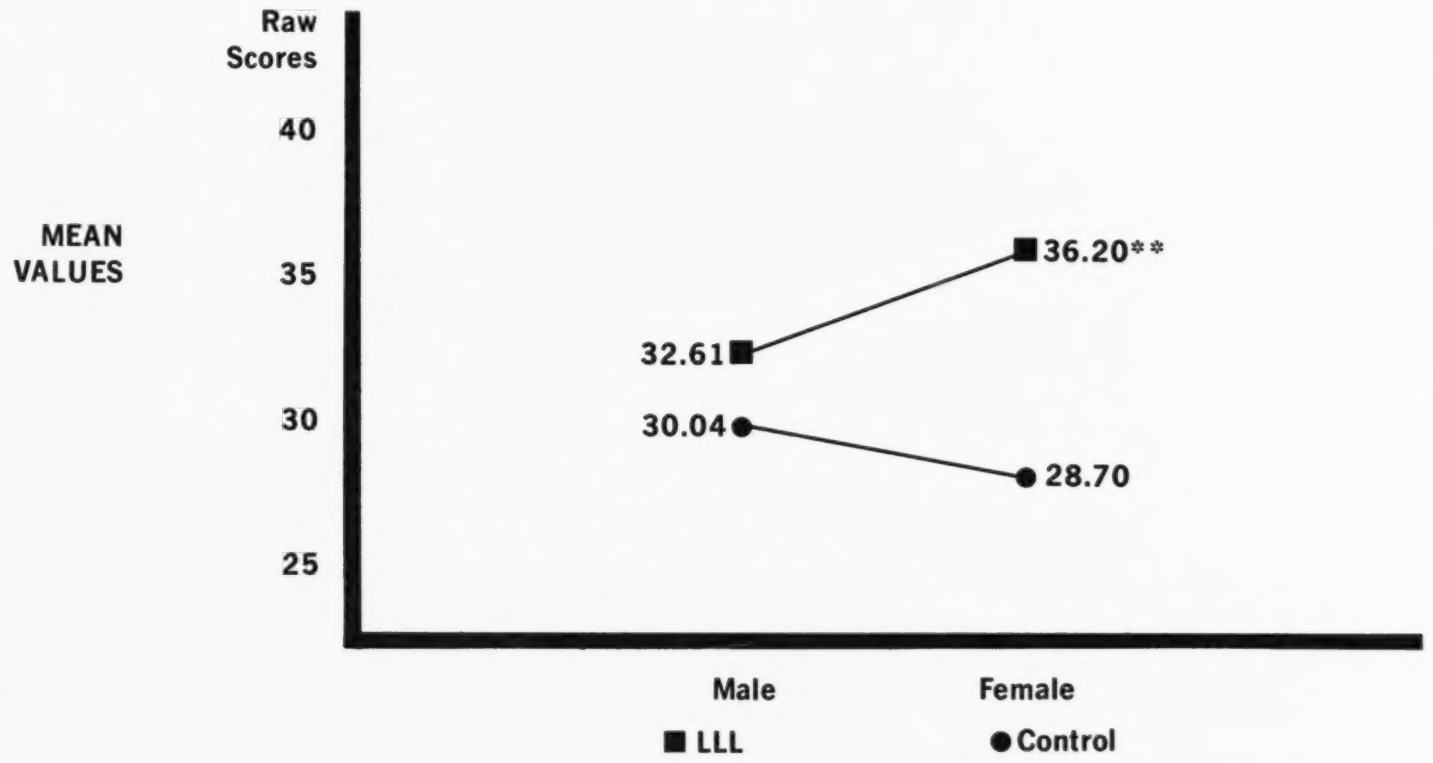
Figure 5.



** LLL group favored at the .01 level

Graphical Representation of Two-Way Interaction of Sex by Treatment Group for Paragraph Meaning Subtest of the Stanford Achievement Test, Primary II

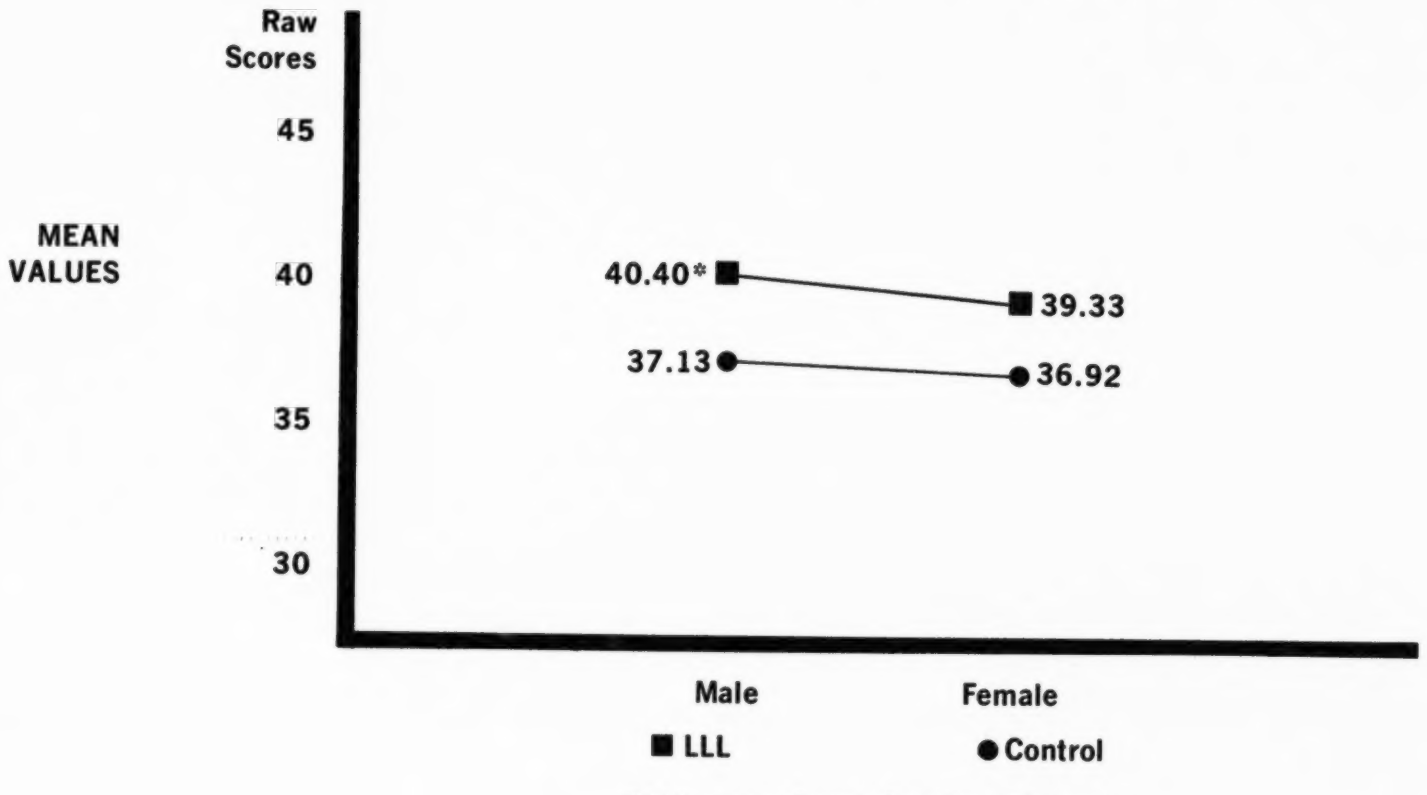
Figure 6.



** LLL group favored at the .01 level

Graphical Representation of Two-Way Interaction of Sex by Treatment Group for Word Study Skills Subtest of the Stanford Achievement Test, Primary II

Figure 7.



Graphical Representation of Two-Way Interaction of Sex by Treatment Group for Cooperative Primary Listening Test

Figure 8.

Only one significant interaction was found in Table VII, that of treatment by ability level by sex for the Listening test. In general, it can be stated that differences between means of LLL and control children were essentially equal in terms of direction and magnitude regardless of the ability level or sex category. This can best be shown by referring to Figures 1 through 8.

It can be noted from Figures 1-4 that for both LLL and control groups, average-ability students achieve at higher levels than low-ability students and these differences are of approximately the same magnitude; also, high-ability students do better than average-ability students. (Note: The slope of the lines and the distance between the points representing these values are similar.) As shown in Figures 5-7, girls and boys of the control classes scored at essentially the same point; in the LLL classes girls scored somewhat higher than boys. In contrast, in Figure 8, on the Listening test the results for the LLL classes were essentially the same for boys and girls.

In order to further study differences between LLL and control groups, the studentized range statistic was used to test the data in Figures 1-8. Highly significant ($p<.01$) differences are indicated on these graphs by a double asterisk and significant ($p<.05$) differences by a single asterisk. In these comparisons, the LLL groups were significantly

higher than the control groups in 8 of the 12 ability comparisons. No differences were found that favored children from the control group.

Results of the Comparison of Second-Year Students Who Used LLL for One Year or Two Years, and Control Group

In addition to the analysis of differences between LLL and control children, it was of interest to consider the differences among LLL children who were in the program for two years (grade one and grade two), LLL children who had only one year in the program (text-oriented program in grade one and LLL in grade two), and control children who had text-oriented instruction for two years.

A 3 x 3 x 2 (years in LLL by ability level by sex) factorial design and Analysis of Variance was used for this analysis. Similar statistical safeguards (proportionality among cells and the F Max test), were employed in these analyses as were employed for the primary analysis. Table VIII is a summary of these results. An overall significant difference was detected for the Word Meaning subtest. Figure 9, the graphical representation of the results for this subtest, indicates the pattern of mean raw score values. In general, although significant differences were not detected for each test, the pattern of all achievement test scores was consistent. Students who had been in LLL classrooms for two years scored at levels above those attained by one-year LLL students and, again as a general pattern, children from both LLL groups scored above children from the control group.

TABLE VIII

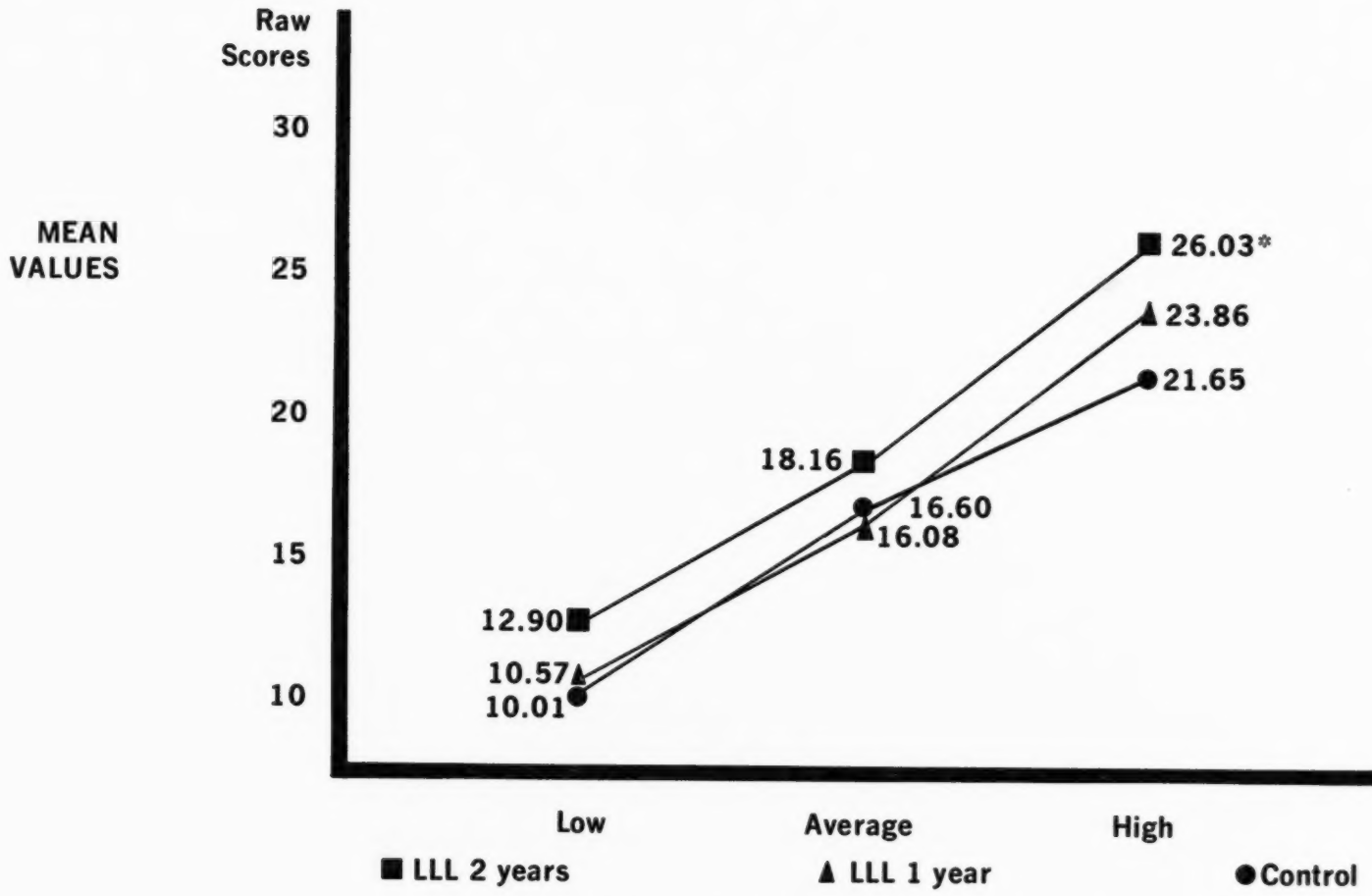
SUMMARY OF F-RATIOS AND ERROR MEAN SQUARES FOR ANALYSIS OF VARIANCE: TWO-YEAR LISTEN LOOK LEARN AND ONE-YEAR LISTEN LOOK LEARN STUDENTS COMPARED TO CONTROL STUDENTS

		Stanford Achievement Test[a] — Subtests			Cooperative Tests[b]
Source of Variation	df	Word Meaning	Paragraph Meaning	Word Study Skills	Listening
Treatment	2	4.06*	2.64	1.49	1.66
Ability Level	2	47.54**	69.15**	37.34**	45.49**
Sex	1	.04	.38	8.47**	1.95
Treatment x Ability Level	4	.74	.60	.38	.60
Treatment x Sex	2	1.03	.92	.10	1.29
Ability Level x Sex	2	1.01	1.37	1.00	.03
Treatment x Ability Level x Sex	4	1.67	.65	2.04	1.02
Error Mean Square	388	54.72			
	388		114.64		
	329			102.34	
	177				26.11

[a] Primary II Reading subtests, administered May 1969
[b] Cooperative Primary Listening Test, administered May 1969
* $p \leq .05$
** $p < .01$

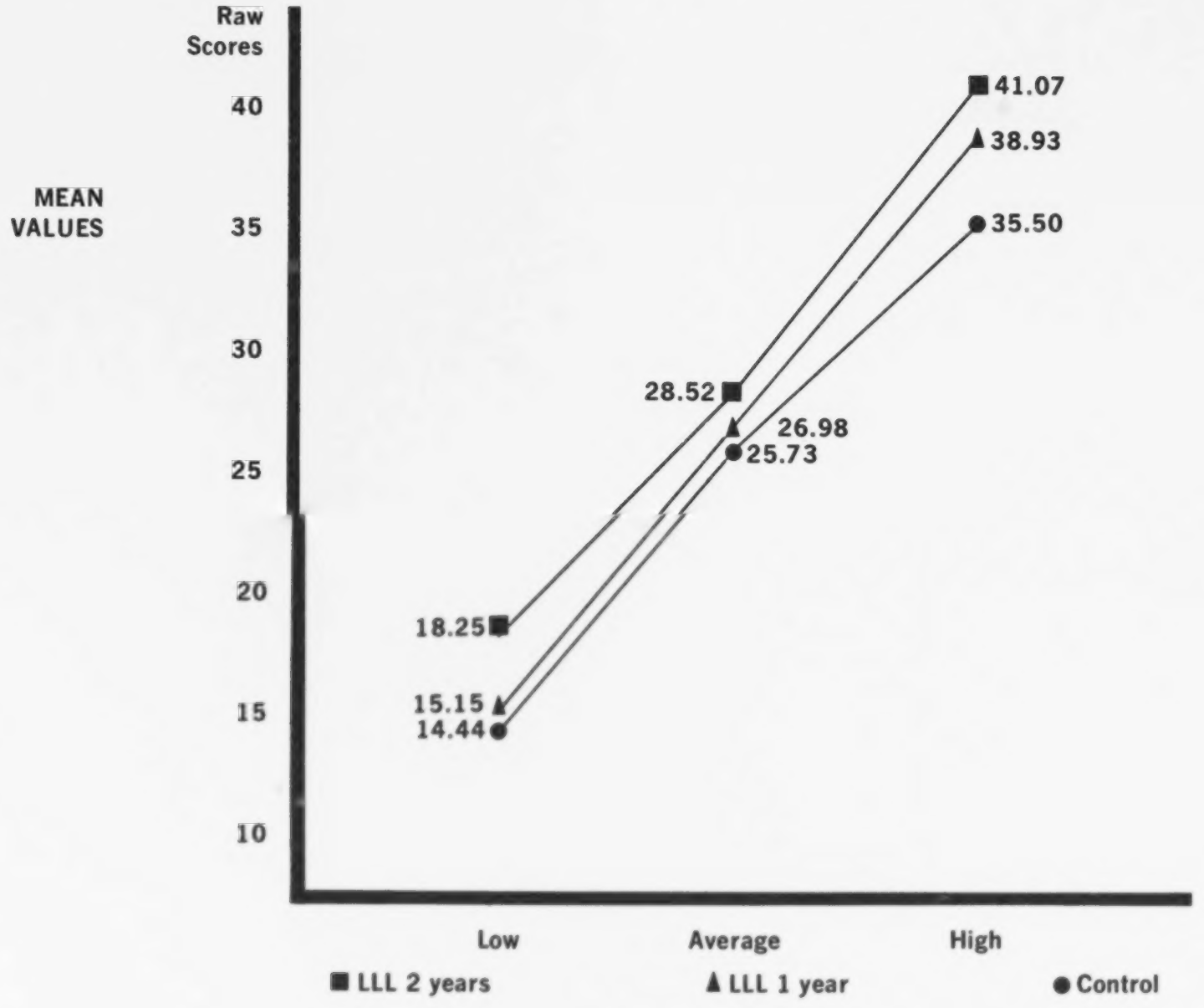
Consistent with the primary analysis, significant differences due to ability level and favoring high-ability students were found for each subtest and the Listening test. For one subtest, Word Study Skills, a significant difference for the main effect of sex favoring girls was detected. No additional main effect or interaction significant differences were detected. (See Table VIII and Figures 9-12.)

Figures 9-12 provide graphical representations of mean values for the Word Meaning, Paragraph Meaning, and Word Study Skills subtests of the *Stanford Achievement Test* and for the *Cooperative Primary Tests*, Listening.



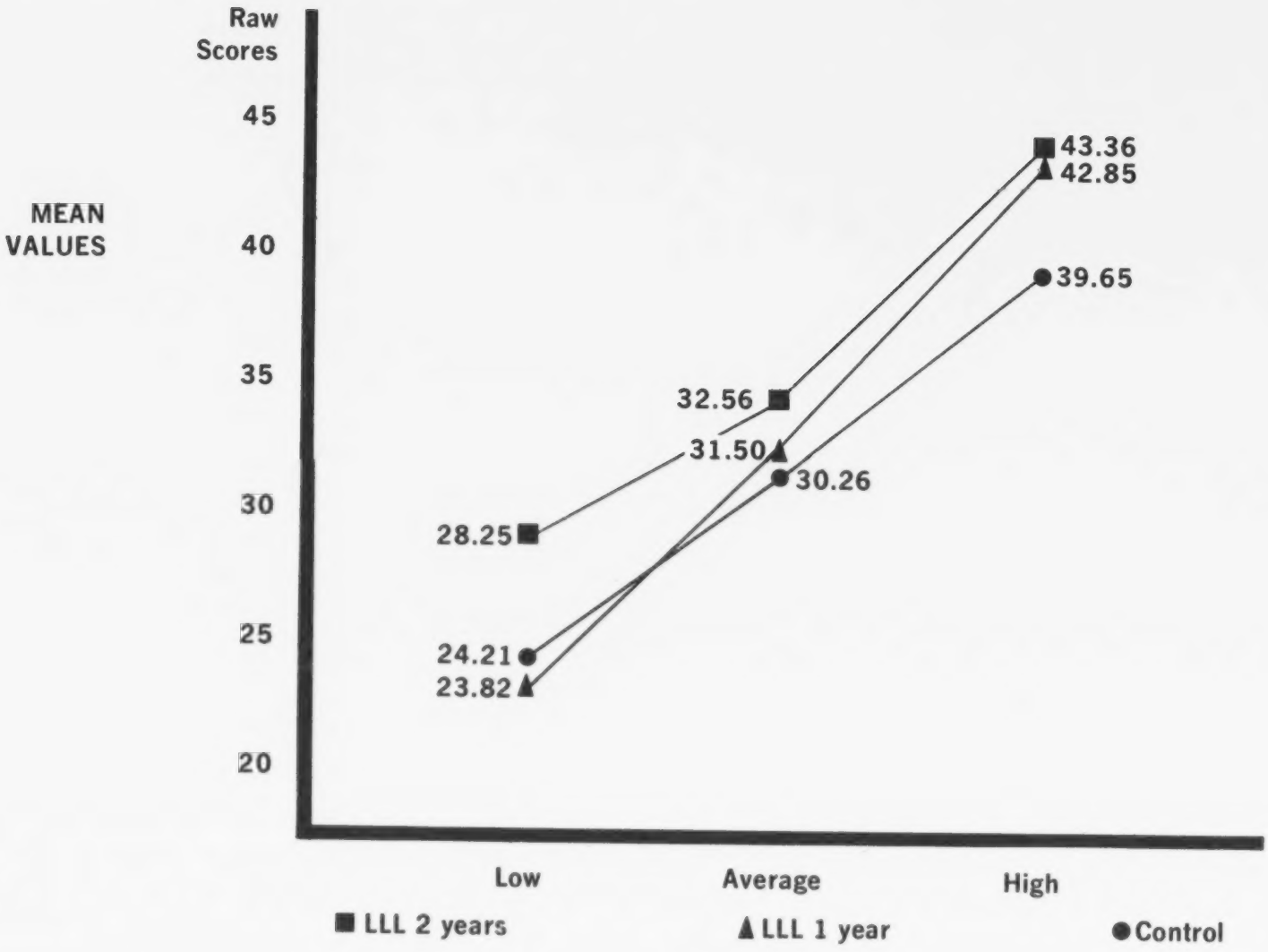
Graphical Representation of Two-Way Interaction of Ability Level by Treatment Group for Word Meaning Subtest of the Stanford Achievement Test, Primary II

Figure 9.



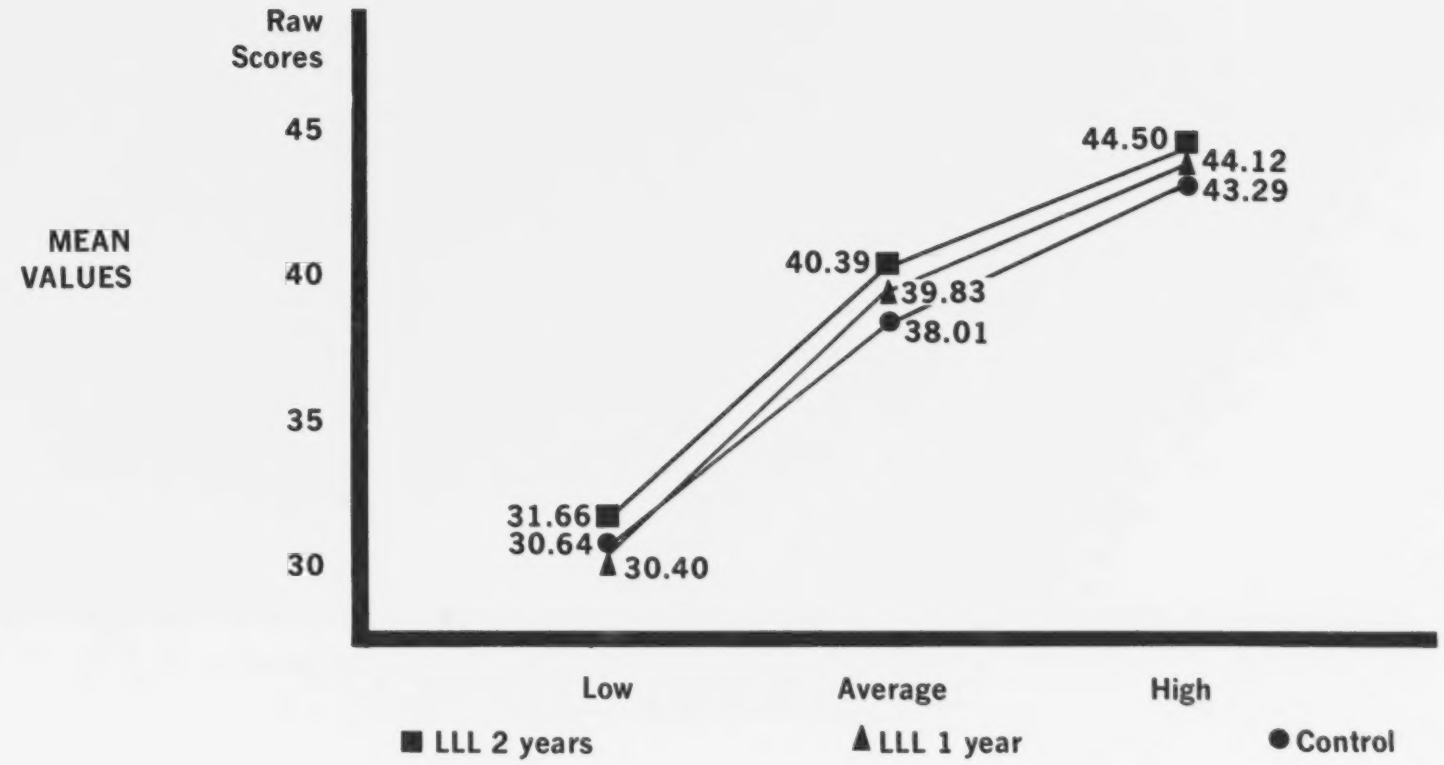
Graphical Representation of Two-Way Interaction of
Ability Level by Treatment Group for
Paragraph Meaning Subtest of the
Stanford Achievement Test, Primary II

Figure 10.



Graphical Representation of Two-Way Interaction of
Ability Level by Treatment Group for
Word Study Skills Subtest of the
Stanford Achievement Test, Primary II

Figure 11.



Graphical Representation of Two-Way Interaction of Ability Level by Treatment Group for Cooperative Primary Listening Test

Figure 12.

Results of the Auxiliary Analyses

An auxiliary analysis of data was done in order to examine the relative success of the LLL and control students in communities of different sizes. In the first-year study, it was possible to perform a similar analysis by categorizing students according to four community sizes: 2,500 population and below; 2,500 to 10,000; 10,000 to 50,000; and 50,000 population and above. Smaller sample size and lack of classroom units from communities smaller than 10,000 required that only two categories be classified for the second-year study; community size was categorized as small population: less than 50,000, or large population: 50,000 or more. A 2 x 2 x 2 factorial design (treatment by community size by sex) and Analysis of Covariance was used for this analysis. The covariate on which students were statistically equated was the deviation IQ of the *Otis Lennon Mental Ability Test.*

Table IX is a summary of this analysis. Figures 13-16 provide adjusted mean raw score values for LLL and control students for the two-way interactions of treatment by size of community. Table IX shows that, with the sample sorted according to community size, no differences were detected due to treatment or community size effects. Significant differences were found due to sex for the Word Study Skills subtest and for the Listening test. For the Word Study Skills subtest the significant difference found, due to sex,

favored girls; for the Listening test, the significant difference favored boys. Table IX also indicates that treatment by community size interaction was significant for the three reading subtests of the *Stanford Achievement Test*. The results obtained for these three subtests are consistent: no significant differences were found between children in LLL or control classes in small communities, but highly significant differences favoring LLL children were found for that part of the sample from large communities. (See Figures 13, 14, and 15.)

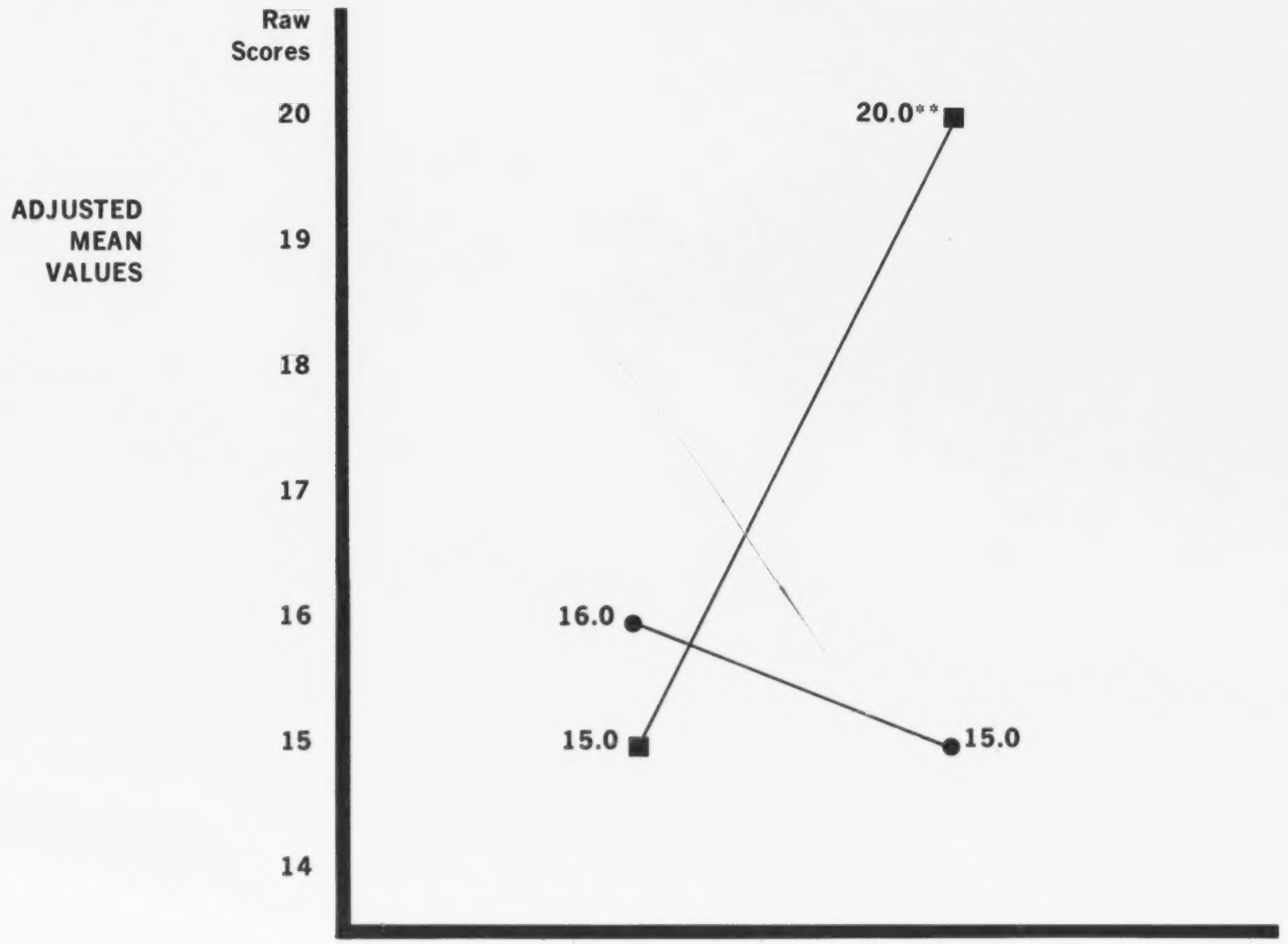
TABLE IX

SUMMARY OF F-RATIOS AND ERROR MEAN SQUARES FOR ANALYSIS OF COVARIANCE [a] FOR THE AUXILIARY DESIGN PREPARED TO TEST DIFFERENCES RESULTING FROM COMMUNITY SIZE: SECOND-YEAR STUDY 1968-1969

Source of Variation	df	Stanford Achievement Test [b] — Subtests			Cooperative Tests [c]
		Word Meaning	Paragraph Meaning	Word Study Skills	Listening
Treatment	1	2.01	2.19	1.08	1.82
Size of Community	1	.01	.04	1.00	.09
Sex	1	1.66	2.38	7.22**	4.88*
Treatment x Size of Community	1	20.93**	8.92**	7.00*	2.32
Treatment x Sex	1	.03	.07	.00	.01
Size of Community x Sex	1	.04	.07	.10	.09
Treatment x Size of Community x Sex	1	.31	.74	.35	1.35
Error Mean Square	452	47.91			
	452		109.12		
	407			94.01	
	181				20.67

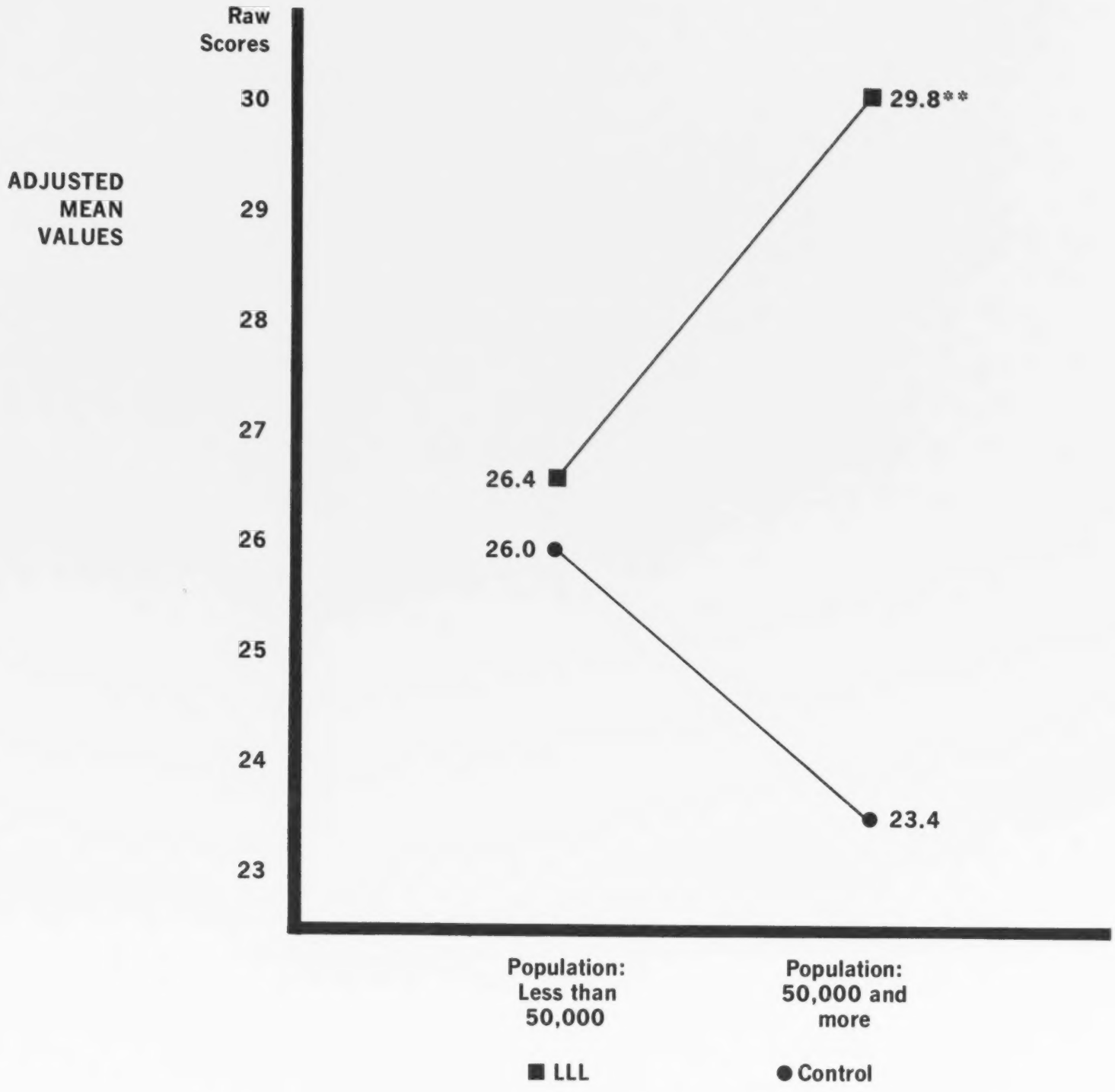
[a] Otis Lennon Mental Ability Test Elementary I, administered October 1968
[b] Primary II Reading subtests, administered May 1969
[c] Cooperative Primary Listening Test, administered May 1969
* $p < .05$
** $p < .01$

The pattern of results was reversed, although not at significant levels, for the Listening test. Students from small communities scored at higher levels than did students from large communities. (See Figure 16.)



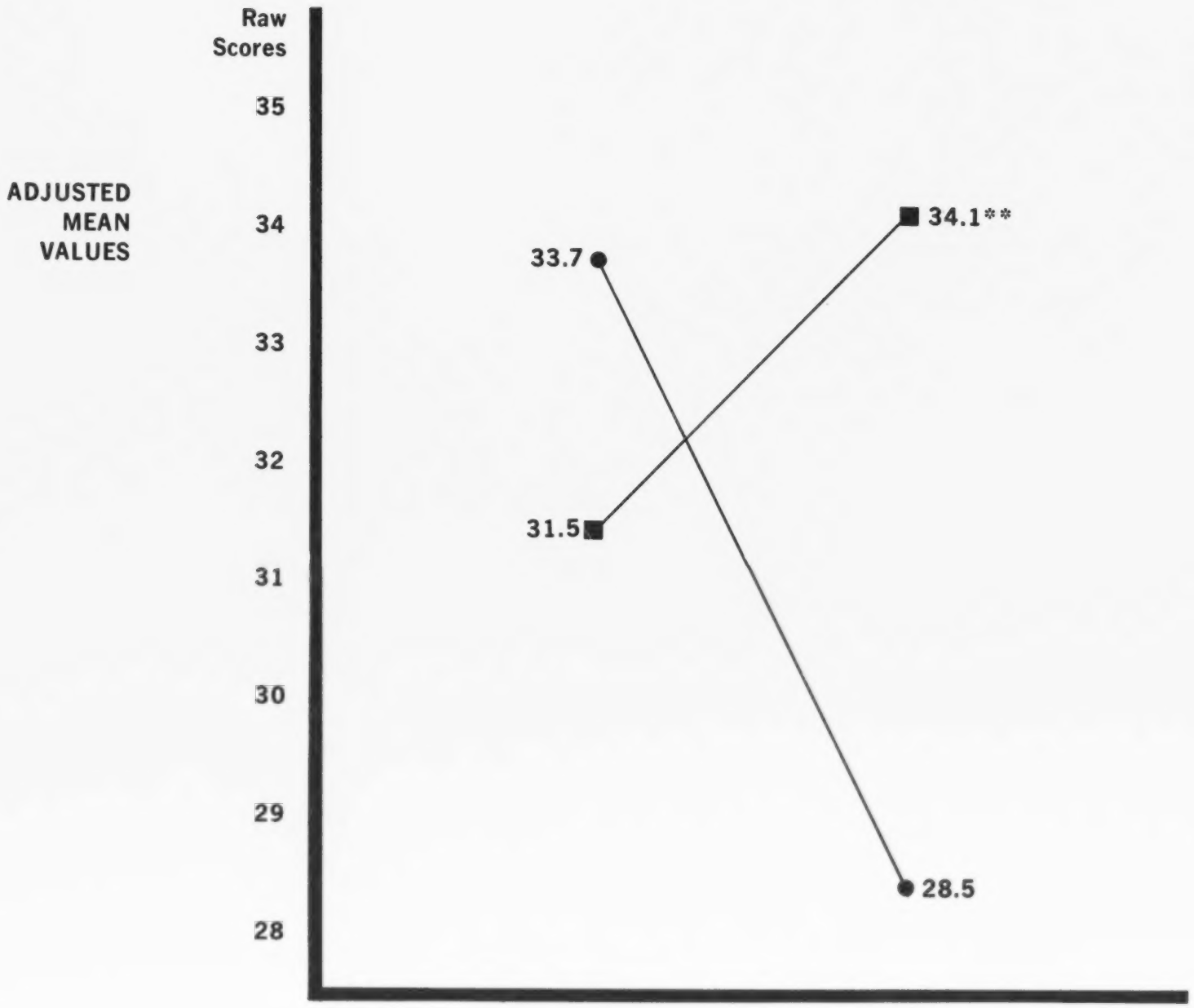
Graphical Representation of Two-Way Interaction of Size of Community by Treatment Group for Word Meaning Subtest of the Stanford Achievement Test, Primary II

Figure 13.



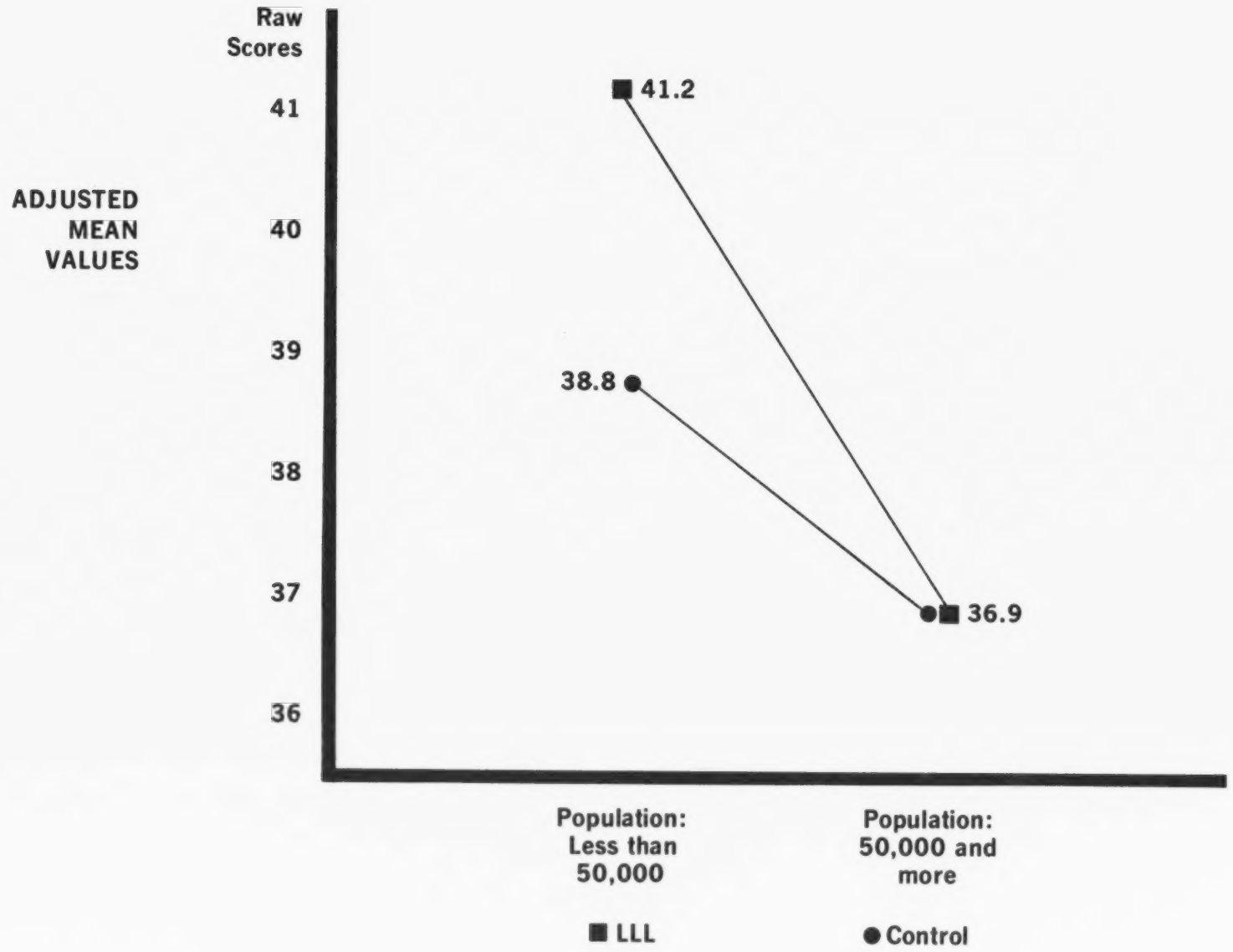
Graphical Representation of Two-Way Interaction of Size of Community by Treatment Group for Paragraph Meaning Subtest of the Stanford Achievement Test, Primary II

Figure 14.



Graphical Representation of Two-Way Interaction of Size of Community by Treatment Group for Word Study Skills Subtest of the Stanford Achievement Test, Primary II

Figure 15.



Graphical Representation of Two-Way Interaction of Size of Community by Treatment Group for Cooperative Primary Listening Test

Figure 16.

A second auxiliary analysis of data was made following sorting of data by socioeconomic status of the students. LLL and control teachers were asked to categorize each student within their classes according to income, educational level, and occupation of the head of the household. During the first year of the study, 1967-1968, it was possible by this method to define large subsamples of children who could be categorized as belonging to high, average, and low socioeconomic categories. However, during the 1968-1969 study, only one LLL and one control teacher listed students as members of the high socioeconomic category. To include these few children as a third level of the socioeconomic dimension would have necessitated dropping many cases at random from the other two levels of the dimension in order to restore proportionality. It was decided,

therefore, to analyze results only for those children defined by their teachers to be from an average or low socioeconomic background.

A 2 x 2 x 2 (treatment by socioeconomic status by sex) factorial design and Analysis of Covariance was used to analyze the data. The results of the *Otis Lennon Mental Ability Test* were used as the covariate. Table X is a summary of this analysis. It can be seen from this table and from Figures 17 through 20 that main effects (treatment, socioeconomic status, and sex) were, in general, not significant. For the Listening test, the treatment effect was significant and favored LLL students.

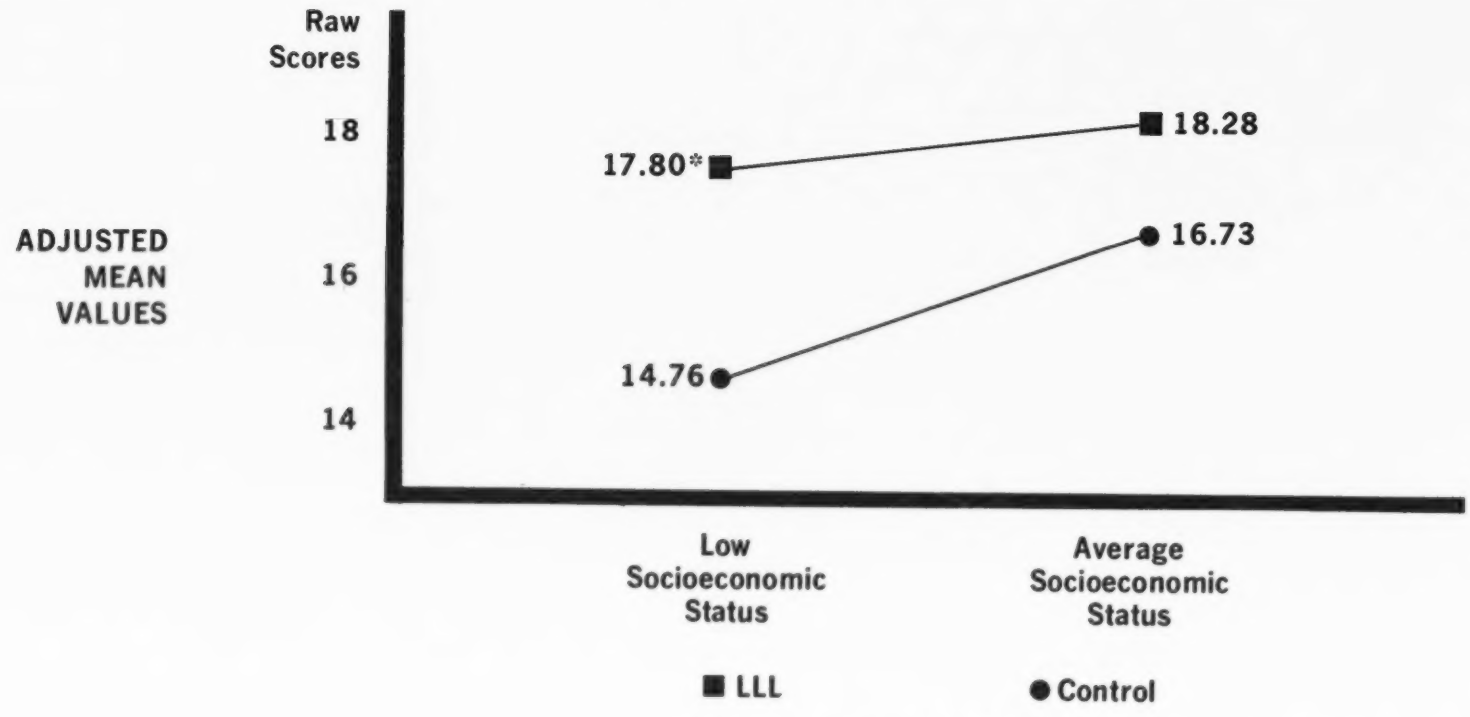
TABLE X

SUMMARY OF F-RATIOS AND ERROR MEAN SQUARES FOR ANALYSIS OF COVARIANCE[a] FOR THE AUXILIARY DESIGN PREPARED TO TEST DIFFERENCES RESULTING FROM SOCIOECONOMIC BACKGROUND OF STUDENTS: SECOND-YEAR STUDY 1968-1969

		Stanford Achievement Test[b] — Subtests			Cooperative Tests[c]
Source of Variation	df	Word Meaning	Paragraph Meaning	Word Study Skills	Listening
Treatment	1	2.27	1.38	.43	5.21*
Socioeconomic Status	1	1.06	2.61	2.52	3.13
Sex	1	.82	.69	1.55	.13
Treatment x Socioeconomic Status	1	.72	1.41	1.50	.91
Treatment x Sex	1	.01	.01	.24	.00
Socioeconomic Status x Sex	1	2.15	2.85	1.52	.01
Treatment x Socioeconomic Status x Sex	1	.76	.57	.56	.08
Error Mean Square	432	52.10			
	432		108.85		
	393			92.95	
	171				27.91

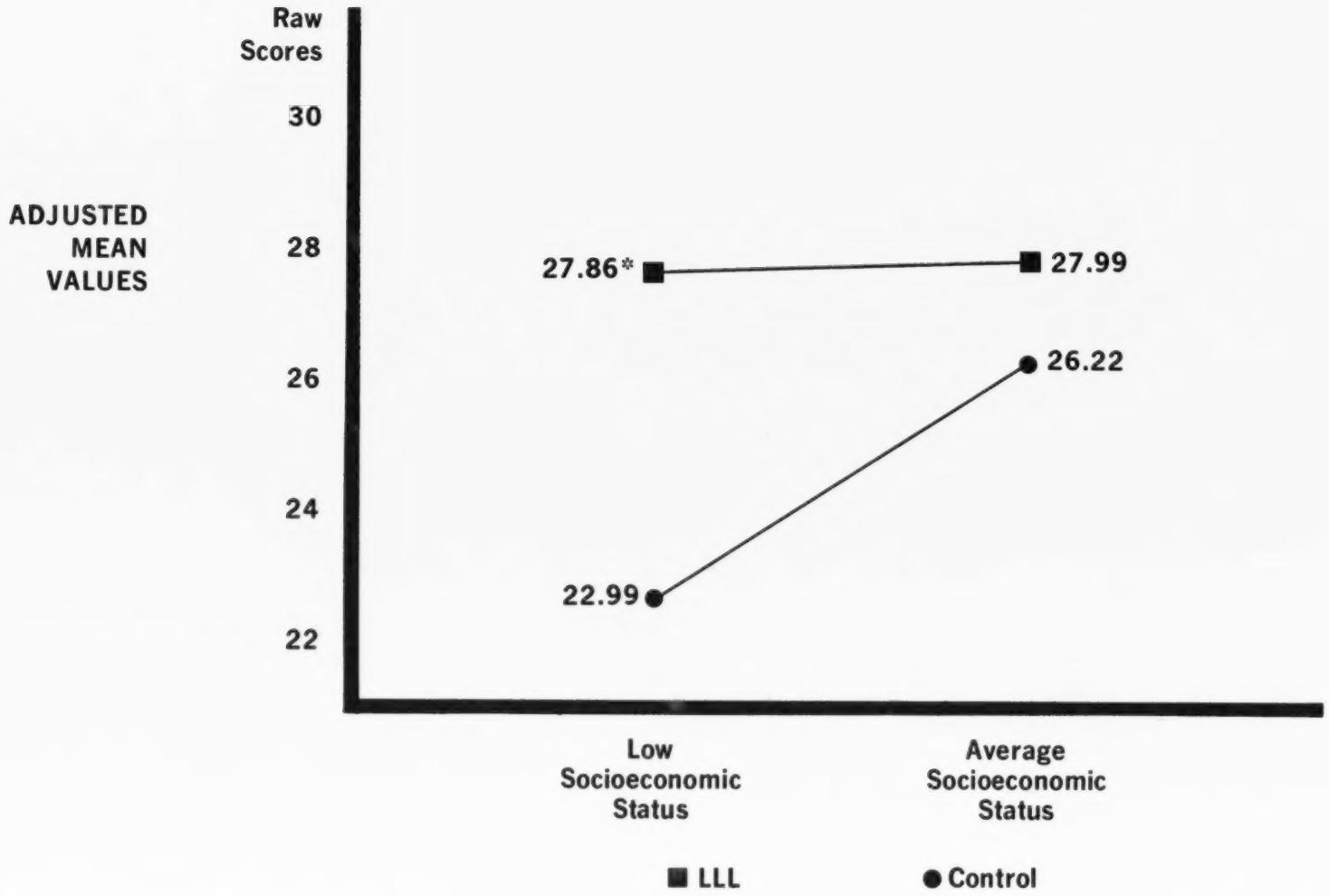
[a] Otis Lennon Mental Ability Test Elementary I, administered October 1968
[b] Primary II Reading subtests, administered May 1969
[c] Cooperative Primary Listening Test, administered May 1969
* $p < .05$

The pattern of results for the total analysis, however, is of interest. LLL students from low socioeconomic backgrounds scored significantly higher on Word Meaning and Paragraph Meaning subtests than did control students from a similar background. While no other significant differences were detected between treatment groups after blocking on socioeconomic category, it can be seen that LLL students scored at generally higher levels than did students from control classes for all comparisons.



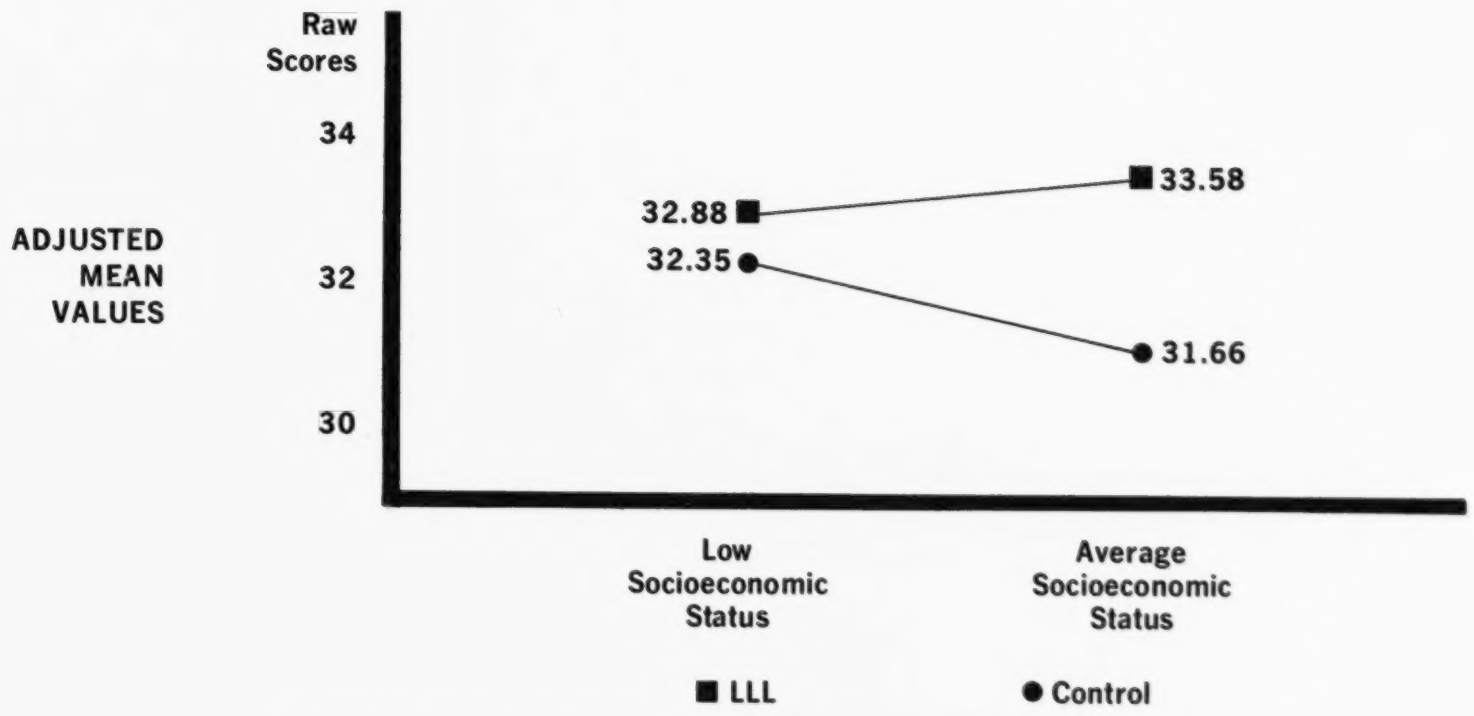
Graphical Representation of Two-Way Interaction of Socioeconomic Status by Treatment Group for Word Meaning Subtest of the Stanford Achievement Test, Primary II

Figure 17.



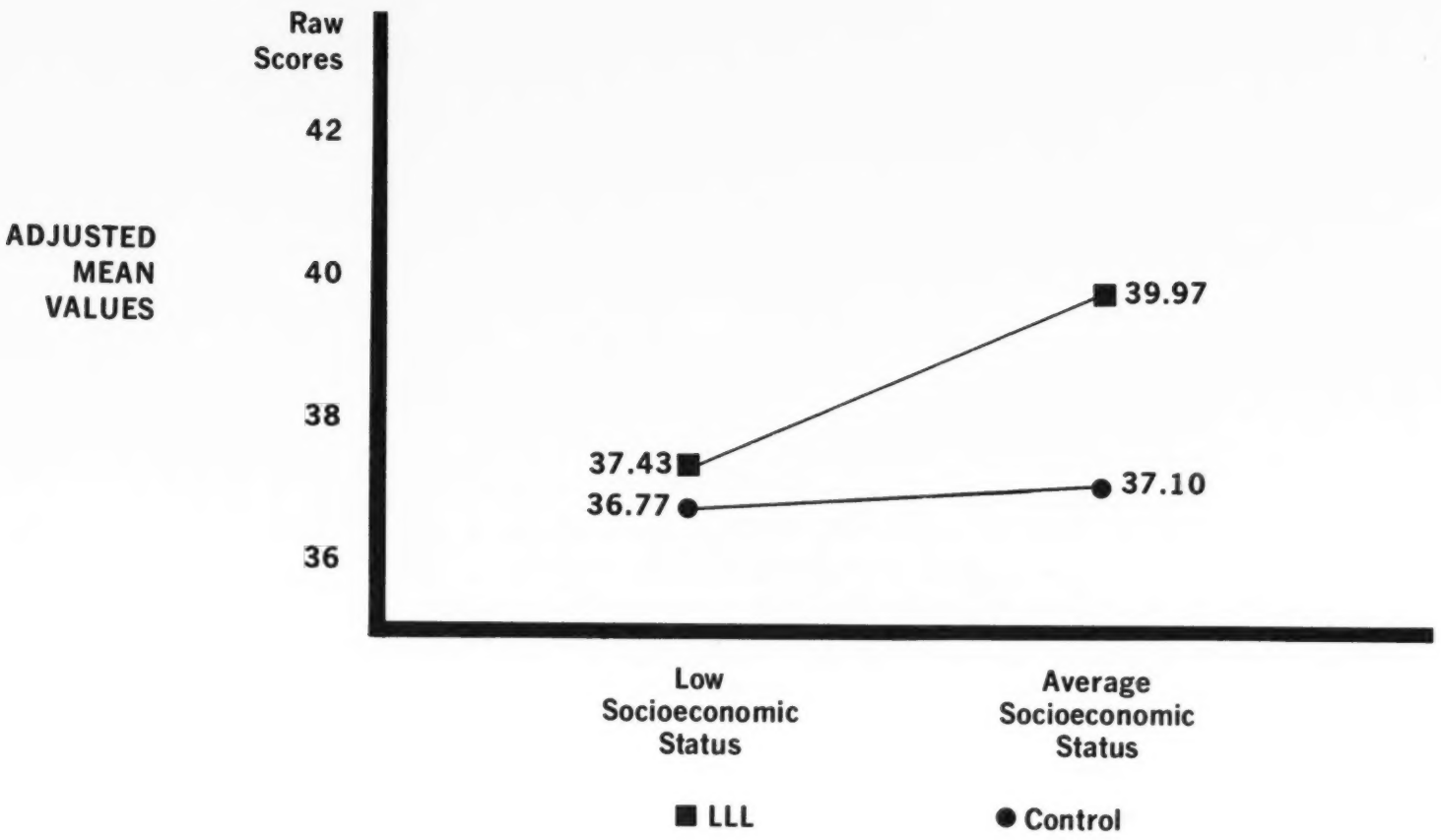
Graphical Representation of Two-Way Interaction of Socioeconomic Status by Treatment Group for Paragraph Meaning Subtest of the Stanford Achievement Test, Primary II

Figure 18.



Graphical Representation of Two-Way Interaction of Socioeconomic Status by Treatment Group for Word Study Skills Subtest of the Stanford Achievement Test, Primary II

Figure 19.



Graphical Representation of Two-Way Interaction of Socioeconomic Status by Treatment Group for Cooperative Primary Listening Test

Figure 20.

V

SUMMARY AND CONCLUSIONS

Summary

Twelve experimental (LLL) and twelve control (other basal reading programs) second-year classes constituted the sample during the 1968-1969 research study. This study represents the second segment of the three-year longitudinal study being conducted by Educational Developmental Laboratories to test the effectiveness of the *Listen Look Learn* Multi-Media Communication Skills System. Data were analyzed for 159 students who participated in LLL system instruction during both their first and second year, 113 second-year LLL students who used a traditional reading program during their first year, and 240 control students who had two years of reading instruction in a traditional program.

The data were collected by questionnaires completed by teachers and by standardized tests. The tests, provided by EDL and administered by participating LLL and control teachers, were the *Otis Lennon Mental Ability Test*, the Word Meaning, Paragraph Meaning and Word Study Skills subtests of the *Stanford Achievement Test*, and the *Cooperative Primary Tests*, Listening. To the extent to which the evaluation instruments are

valid and reliable for the sample population, the following major conclusions can be drawn:

Conclusions of Subjective Evaluation

LLL teachers were able to successfully place the majority of their students within the LLL cycles of instruction using divergent methods of placement. Only 20 of the 301 students enrolled in LLL classes were initially incorrectly placed. See page 12.

As the LLL students progressed through the cycles of instruction, the number of days required to complete a cycle diminished from 6.5 days per cycle for Cycles 4-10 to 4.3 days per cycle beyond Cycle 41. See page 9.

Eleven of the twelve cooperating teachers reported that they had enjoyed using LLL. See page 11.

Nine of the twelve cooperating teachers believed the LLL system of instruction to be superior to other programs with which they had had experience. One teacher could make no comparison since this was her first year in teaching. See page 11.

Teachers differed in their opinions regarding the ability level of students for whom the LLL system was most effective. Three felt that LLL was equally effective with all students, two believed low-ability students benefited most, four considered it to be most effective with average children and three were of the opinion that LLL was most effective with high-ability children. See page 12.

Conclusions of Objective Evaluation

IQ scores and children's ages were similar for LLL and control students. See Table II, page 17.

Number of cycles completed and scores on posttests were highly related. See Table V, page 20.

Second-year students who completed approximately forty cycles of LLL instruction scored at or above grade level on the *Stanford Achievement Test* subtests. See Table V, page 20.

If a "typical" or hypothetical second-year LLL student could be selected from the two-year study, he would have the following characteristics: forty-eight cycles of instruction, an IQ within the range of 90-102, a score two months above grade level on the Word Meaning and Paragraph Meaning subtests and one month above grade level on the Word Study Skills subtest of the *Stanford Achievement Test*. See Table V, page 20.

Students working at or above Cycle 51 scored from three months to two years and two months above grade level. See Table V, page 20.

LLL students scored at a highly significant level ($p<.01$) above control students on the Word Meaning, Paragraph Meaning, and Word Study Skills subtests of the *Stanford Achievement Test* and at a significant level ($p<.05$) above control students on the *Cooperative Primary Tests*, Listening. See Table VII, page 22.

LLL students in each ability level (low, average, and high ability) scored at a highly significant level ($p<.01$) above control students on the Word Meaning and Paragraph Meaning subtests of the *Stanford Achievement Test*. See Table VII, Figures 1 and 2, pages 22, 23 and 24.

High-ability LLL students scored at a significant level above control students on the Word Study Skills subtest of the *Stanford Achievement Test*. See Table VII and Figure 3, pages 22 and 25.

Average-ability LLL students scored at a significant level above control students on the *Cooperative Primary Tests*, Listening. See Table VII, and Figure 4, pages 22 and 26.

Total girls in the LLL group scored at a highly significant level above total girls in the control group on all *Stanford Achievement Test* subtests. See Table VII, Figures 5, 6, and 7, pages 22, 26, and 27.

Total boys in the LLL group scored significantly higher than total boys in the control group on the Listening test. See Table VII, and Figure 8, pages 22 and 28.

Second-year students who had been in LLL classrooms for two years scored consistently higher than second-year students who had been in LLL classrooms for only one year. Children from both LLL groups generally scored above children from control groups. See Table VIII, and Figures 9-12, pages 29, and 30-33.

LLL groups in communities with populations of 50,000 and more scored at a highly significant level ($p<.01$) above control groups on all three *Stanford Achievement Test* subtests. See Table IX, Figures 13, 14, and 15, pages 34, and 35-37.

LLL students were consistently favored over control students when socioeconomic status was used as a design dimension. See Figures 17-20, pages 40-42.

Students from LLL groups categorized by their teachers as having low socioeconomic backgrounds scored at a significant level above comparable students from control groups on the Word Meaning and Paragraph Meaning subtests of the *Stanford Achievement Test*. See Table X, Figures 17 and 18, pages 39, 40 and 41.